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1987  
Census of  
Manufactures

MC87-I-34D

INDUSTRY SERIES

**Screw Machine Products, Fasteners  
and Washers; Metal Forgings and  
Stampings; and Metal Services**

Industries 3451, 3452, 3462, 3463, 3465, 3466, 3469,  
3471, and 3479



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If you have any questions concerning the statistics in this report, call (301) 763-7304.

# 1987

## Census of Manufactures

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# INTRODUCTION

## PURPOSE AND USES OF THE ECONOMIC CENSUSES

The economic censuses are the major source of facts about the structure and functioning of the Nation's economy. They provide essential information for government, business, industry, and the general public.

*Economic censuses furnish an important part of the framework for such composite measures as the gross national product, input-output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions.*

*Policy-making agencies of the Federal Government use the data, especially in monitoring economic activity and providing assistance to business.*

*State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.*

*Trade associations study trends in their own and competing industries, and keep their members informed of market changes.*

*Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.*

## AUTHORITY AND SCOPE

Title 13 of the United States Code (sections 131, 191, and 224) directs the Census Bureau to take the economic censuses every 5 years, covering years ending in 2 and 7. The 1987 Economic Censuses consist of the

- Census of Retail Trade
- Census of Wholesale Trade
- Census of Service Industries
- Census of Transportation
- Census of Manufactures
- Census of Mineral Industries
- Census of Construction Industries

Special programs also cover enterprise statistics and minority-owned and women-owned businesses. (The 1987 Census of Agriculture and 1987 Census of Governments are conducted separately.) The next economic censuses are scheduled to be taken in 1993 covering the year 1992.

## AVAILABILITY OF THE DATA

The results of each of the economic censuses are available in printed reports, for sale by the U.S. Government Printing Office, and on microfiche, computer tape, compact discs with read-only memory, and flexible diskettes, for sale by the Census Bureau. Order forms for all types of products are available on request from Customer Services, Census Bureau, Washington, DC 20233. A more complete description of publications being issued from this census is on the inside back cover of this document.

Census facts are also widely disseminated by trade associations, business journals, and newspapers. Volumes containing census statistics are available in most major public and college libraries. Finally, State Data Centers in every State and Business and Industry Data Centers in many States also supply economic census statistics.

## WHAT'S NEW IN 1987

Several changes have taken place for the 1987 censuses. Data will be reported on the basis of the newly revised Standard Industrial Classification (SIC) system with selected reports including "bridge tables," linking the old and new classification systems. A new set of metropolitan areas has been adopted, and more detailed information will be available for businesses with no paid employees. For additional information on these changes, review the subsequent text.

## HISTORICAL INFORMATION

The economic censuses have been taken together as an integrated program at 5-year intervals since 1967, and before that for 1963, 1958, and 1954. Prior to that time, the individual censuses were taken separately at varying intervals.

The economic censuses trace their beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for 1840 and subsequent censuses to include mining and some commercial

were not distributed among specific products and materials for these establishments but were included in the product and material "not specified by kind" (n.s.k.) categories.

The industry classification codes included in the administrative-records files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded at the four-digit SIC level. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes these administrative-record cases were only given a two- or three-digit SIC group. For the 1987 Census of Manufactures, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the four-digit SIC level. Establishments that did not return the classification form were coded later to those four-digit SIC industries identified as "not elsewhere classified" (n.e.c.) within the given two- or three-digit industry groups.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

## 2. Establishments Sent a Report Form

The 200,000 establishments covered in the mail canvass were divided into three groups:

- a. **ASM sample establishments**—This group consisted of approximately 56,000 establishments covering all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size (see appendix, Annual Survey of Manufactures).

In a census of manufactures year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, and costs of purchased services. See appendix A, section 2, for an explanation of these items.

The census part of the report form is one of approximately 200 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of these many forms to canvass the 459 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to be performing. Respondents were requested to identify the products, the value of each product, and, in a large number of cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry, which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant material not identified on the form.

Finally, a wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

- b. **Large and medium establishments (non-ASM)**—Approximately 84,000 establishments were included in this group. A variable cutoff, based on administrative-records payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive one of the approximately 200 census of manufactures regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.
- c. **Small single-establishment companies (non-ASM)**—This group consisted of approximately 60,000 establishments. For those industries where application of the variable cutoff for administrative-records cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or "short" form was used. These establishments received one of the approximately 80 versions of the short form, which requested



summary product and material data and totals but no details on employment, payrolls, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics; the same data were collected on the short form as on the long form. However, detailed information on materials consumed was not collected on the short form; thus its use would increase the value of the n.s.k. categories.

## Auxiliaries

In this industry report, the data on employment and payroll are limited to operating manufacturing establishments. The census report form filed for auxiliaries (ES-9200) requested a description of the activity of the establishments serviced. However, the manufacturing auxiliaries were coded only to the two-digit major group of the establishments they served; whereas, the operating establishments were coded to a four-digit manufacturing industry. Data for the approximately 10,000 separately operated auxiliaries are included in the geographic area series and in a report issued as part of the 1987 Enterprise Statistics Survey.

Auxiliaries are establishments whose employees are primarily engaged in performing supporting services for other establishments of the same company, rather than for the general public or for other business firms. They can be at different locations from the establishments served or at the same location as one of those establishments but not operating as an integral part thereof and serving two establishments or more. Where auxiliary operations are conducted at the same location as the manufacturing operation and operate as an integral part thereof, they usually are included in the report for the operating manufacturing establishment.

Included in the broad category of auxiliaries are administrative offices. Employees in administrative offices are concerned with the general management of multiestablishment companies, i.e., with the general supervision and control of two units or more, such as manufacturing plants, mines, sales branches, or stores. The functions of these employees may include (1) program planning, including sales research and coordination of purchasing, production, and distribution; (2) company purchasing, including general contracts and purchasing methods; (3) company financial policy and accounting; (4) general engineering, including design of product machinery and equipment, and direction of engineering effort conducted at the individual operation locations; (5) direction of company personnel matters; and (6) legal and patent matters.

Other types of auxiliaries serving the plants or central management of the company include purchasing offices, sales promotion offices, research and development organizations, etc.

## Industry Classification of Establishments

Each of the establishments covered in the census was classified in 1 of 459 manufacturing industries in accordance with the industry definitions in the 1987 SIC Manual. The 1987 edition of this manual represents a major revision for manufacturing industries from the 1972 edition and its 1977 supplement. Appendix A of the 1987 Manual notes the revisions in the four-digit industry levels between 1972/77 and 1987.

An industry is generally defined as a group of establishments producing the same product or a closely related group of products. The product groupings from which industry classifications are derived are based on considerations such as similarity of manufacturing processes, types of materials used, types of customers, and the like. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees. The system operates in such a way that the definitions progressively become narrower with successive additions of numerical digits. For 1987, there are 20 major groups (two-digit SIC), 139 industry groups (three-digit SIC), and 459 industries (four-digit SIC). This represents an expansion of four-digit industries from 452 in 1972/77 and a reduction of three-digit groups from 143 in 1972/77. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are about 11,000 products identified by a seven-digit code. The seven-digit products are considered the primary products of the industry with the same four digits.

Accordingly, an establishment is usually classified in a particular industry on the basis of its major activity during a particular year, i.e., production of the products primary to that industry exceeds, in value, production of the products primary to any other single industry. In a few instances, however, the industry classification of an establishment is not only determined by the products it makes but also by the process employed in operations. Refining of nonferrous metals from ore or rolling and drawing of nonferrous metals (processes which involve heavy capitalization in specialized equipment) would be classified according to the process used during a census year. These establishments then would be "frozen" in that industry during the following ASM years.

In either a census or ASM year, establishments included in the ASM sample with certainty weight, other than those involved with heavily capitalized activities described above, are reclassified by industry only if the change in the primary activity from the prior year is significant or the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year (see appendix, Annual Survey of Manufactures).



However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The result of these rules covering the switching of plants from one industry classification to another is that, at the aggregate level, some industries comprise different mixes of establishments between survey years, and establishment data for such industry statistics as employment and payroll may be tabulated in different industries between survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the four-digit SIC level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

While some establishments produce only the primary products of the industry in which they are classified, all establishments of an industry rarely specialize to this extent. The industry statistics (employment, inventories, value added by manufacture, total value of shipments including resales and miscellaneous receipts, etc.) shown in tables 1a through 5a, therefore, reflect not only the primary activities of the establishments in that industry but also their secondary activities. The product statistics in table 6a represent the output of all establishments whether or not they are classified in the same industry as the product. For this reason, in relating the industry statistics, especially the value of shipments to the product statistics, the composition of the industry's output shown in table 5b should be considered.

The extent to which industry and product statistics may be matched with each other is measured by two ratios which are computed from the figures shown in table 5b. The first of these ratios, called the primary product specialization ratio, measures the proportion of product shipments (both primary and secondary) of the establishments classified in the industry represented by the primary products of those establishments. The second ratio, called the coverage ratio, is the proportion of primary products shipped by the establishments classified in the industry to total shipments of such products by all manufacturing establishments.

However, establishments making products falling into the same industry category may use a variety of processes and materials to produce them. Also, the same industry classification (based on end products) may include both establishments that are highly integrated and those that put only the finishing touches on an already highly fabricated item. For example, the refrigeration equipment industry includes instances of almost complete integration (production of the compressor, condensing unit, electric motor, casting, stamping of the case, and final assembly) all

carried on at one plant. On the other hand, the condensing unit, the motor, and the case may be purchased and only assembled into the finished product.

In some instances, separate industry categories have been established for integrated and nonintegrated establishments. For other industries, the census provides separate statistics on the production of intermediate commodities made and used in the producing plant. For some industries characterized by many plants of the same company, separate figures on interplant transfers of products usually are shown.

Differences in the integration of production processes, types of operations, and alternatives in types of materials used should be considered when relating the industry statistics (employment, payrolls, value added, etc.) to the product and material data.

### **Value of Shipments for the Industry Compared With Value of Product Shipments**

This report shows value of shipments data for industries and products. In tables 1a through 5a, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in table 6a represents the total value of all products shipped that are classified as primary to an industry.

### **CENSUS DISCLOSURE RULES**

In accordance with Federal law governing census reports, no data are published that would disclose the data for an individual establishment or company. However, the number of establishments classified in a specific industry is not considered a disclosure, so this information may be released even though other information is withheld.

The disclosure analysis for the industry statistics in tables 1a through 5a of this report is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed. However, the suppressed data are included in higher-level totals. Additional disclosure analysis is performed for new capital expenditures that can be suppressed even though value of shipments data are publishable.

### **SPECIAL TABULATIONS**

Special tabulations of data collected in the 1987 Census of Manufactures may be obtained on computer tape or in tabular form. The data will be in summary form and subject to the same rules prohibiting disclosure of confidential



information (including name, address, kind of business, or other data for individual business establishments or companies) as are the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief, Industry Division, Bureau of the Census, Washington, DC 20233.

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in this publication:

-	Represents zero.
(D)	Withheld to avoid disclosing data for individual companies; data are included in higher level totals.
(NA)	Not available.
(NC)	Not comparable.
(S)	Withheld because estimate did not meet publication standards.
(X)	Not applicable.
(Z)	Less than half the unit shown.
do	Ditto.

n.e.c.	Not elsewhere classified.
n.s.k.	Not specified by kind.
pt.	Part.
r	Revised.
SIC	Standard Industrial Classification.

Other abbreviations, such as lb, gal, yd, doz, bbl, and s tons, are used in the customary sense.

## CONTACTS FOR DATA USERS

Subject Area	Contact	Phone
Census/ASM		
Durables	Kenneth Hansen	(301) 763-7304
Nondurables	Michael Zampogna	(301) 763-2510
Current Industrial Reports		
Durables	Malcolm Bernhardt	(301) 763-2518
Nondurables	Thomas Flood	(301) 763-5911
Import/Export Publications	Foreign Trade Division	(301) 763-5140
Industry Analysis and Forecasts	International Trade Administration	(202) 377-4356

# Users' Guide for Locating Statistics in This Report by Table Number

For explanation of terms, see appendixes

Item	Four-digit industry statistics							Five-digit product class and seven-digit product statistics			
	Historical	Operating ratios	By geographic area	Summary and supplemental	By employment size	By industry and product class specialization	Materials consumed by kind	Industry-product analysis	Product shipments	Product class by geographic area	Historical product class
Number of companies . . . . .	1a			3a					*6a		
Number of establishments . . .	1a		2	3a	4	5a					
Employment and payroll: . . . .											
Number of employees . . . . .	1a	1b	2	3a	4	5a					
Payroll . . . . .	1a	1b	2	3a	4	5a					
Supplemental labor costs . . .				3a							
Production workers . . . . .	1a	1b	2	3a	4	5a					
Production- worker hours . . .	1a	1b	2	3a	4	5a					
Production- worker wages . . .	1a	1b	2	3a	4	5a					
Shipments, cost of materials, and value added:											
Value of shipments (four-digit) . . . . .	1a	1b	2	3a	4	5a		5b			
Product class shipments (five-digits) . . . . .									6a	6b	6c
Product shipments (seven-digit) . . . . .									6a		
Value added by manufacture . . . . .	1a	1b	2	3a	4	5a					
Cost of materials . . . . .	1a	1b	2	3a	4	5a					
Fuels and electric energy . . .				3a							
Materials consumed by kind .							7				
Inventories:											
Total, end of year . . . . .	1a			3a	4						
By stage of fabrication . . . . .				3a							
Capital expenditures, assets, rental payments, and purchased services:											
New capital expenditures . . .	1a		2	3b	4	5a					
Used plant and equipment expenditures . . . . .				3b							
Gross assets . . . . .				3b							
Depreciation . . . . .				3b							
Retirements of buildings and machinery . . . . .				3b							
Rental payments . . . . .				3b							
Foreign content of materials consumed . . . . .				3c							
Purchased services . . . . .				3c							
Ratios:											
Specialization . . . . .	1a			3a				5b			
Coverage . . . . .	1a			3a				5b			

\*Number of companies with shipments of more than \$100 thousand.

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## Screw Machine Products, Fasteners and Washers; Metal Forgings and Stampings; and Metal Services

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# DESCRIPTION OF INDUSTRIES AND SUMMARY OF FINDINGS

This report shows 1987 Census of Manufactures statistics for establishments classified in each of the following industries:

## SIC code and title

3451	Screw Machine Products
3452	Bolts, Nuts, Rivets, and Washers
3462	Iron and Steel Forgings
3463	Nonferrous Forgings
3465	Automotive Stampings
3466	Crowns and Closures
3469	Metal Stampings, N.E.C.
3471	Plating and Polishing
3479	Metal Coating and Allied Services

The industry statistics (employment, payroll, cost of materials, value of shipments, inventories, etc.) are reported for each establishment as a whole. Aggregates of such data for an industry reflect not only the primary activities of the establishments but also their activities in the manufacture of secondary products as well as their miscellaneous activities (contract work on materials owned by others, repair work, etc.). This fact should be taken into account when comparing industry statistics (tables 1 through 5a) with product statistics (table 6) showing shipments by all industries of the primary products of the specified industry. The extent of the "product mix" is indicated in table 5b, which shows the value of primary and secondary products shipped by establishments classified in the specified industry and the value of primary products of the industry shipped as secondary products by establishments classified in other industries.

Small single-establishment companies with up to 20 employees (cutoff varied by industry) were excluded from the mail portion of the census. For these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated), data on payrolls and receipts were obtained from administrative records of other Federal agencies. The remaining statistics were developed from industry averages.

Establishment data were tabulated based on industry definitions included in the 1987 Standard Industrial Classification (SIC) Manual<sup>1</sup>. The 1987 edition represents a major revision for manufacturing industries from the 1972

edition and its 1977 supplement. In addition to the 1987 SIC revision, changes were made to the product class (five-digit) and product code (seven-digit) categories. The product class and product code comparability between the 1987 and 1982 censuses is shown in the appendixes. These appendixes present, in tabular form, the linkage from 1987 to 1982.

All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

## INDUSTRY 3451, SCREW MACHINE PRODUCTS

This industry is made up of establishments primarily engaged in manufacturing automatic or hand screw machine products from rod, bar, or tube stock of metal, fiber, plastics, or other material. The products of this industry consist of a wide variety of unassembled parts and are usually manufactured on a job or order basis. Establishments included in this industry may perform assembly of some parts manufactured in the same establishment, but establishments primarily engaged in producing assembled components are classified according to the nature of the components. Establishments primarily engaged in manufacturing standard bolts, nuts, rivets, screws, and other industrial fasteners on headers, threaders, and nut forming machines are classified in industry 3452.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3451, Screw Machine Products, had employment of 42.7 thousand. The employment figure was 2 percent above the 41.8 thousand reported in 1982. The leading States in employment in 1987 were Michigan, Illinois, Ohio, and California, accounting for 48 percent of the industry's employment. These same States were the leaders in 1982, when they also accounted for 48 percent of the industry's employment.

The total value of shipments for establishments classified in this industry was \$2.8 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3451 shipped \$2.6 billion of products considered primary to the industry, \$137.1 million of secondary products, and

<sup>1</sup>Standard Industrial Classification Manual: 1987. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Stock No. 041-001-00314-2.



had \$90.7 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 95 percent (specialization ratio). In 1982, the specialization ratio was 96 percent.

Establishments in this industry also accounted for 93 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 94 percent. The products primary to industry 3451, no matter in what industry they were produced, appear in table 6a and aggregate to \$2.8 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the screw machine products industry amounted to \$1.1 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 10 percent of total value of shipments.

## **INDUSTRY 3452, BOLTS, NUTS, RIVETS, AND WASHERS**

This industry is made up of establishments primarily engaged in manufacturing metal bolts, nuts, screws, rivets, washers, formed and threaded wire goods, and special industrial fasteners. Rolling mills engaged in manufacturing similar products are classified in major group 33; establishments primarily engaged in manufacturing screw machine products are classified in industry 3451; and those manufacturing plastics fasteners are classified in industry 3089.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3451, Bolts, Nuts, Rivets, and Washers, had employment of 52.0 thousand. The employment figure was less than 1 percent below the 52.2 thousand reported in 1982. The leading States in employment in 1987 were California, Illinois, Michigan, and Pennsylvania, accounting for 57 percent of the industry's employment. This represents a shift from 1982 when California, Illinois, Pennsylvania, and Ohio accounted for 55 percent of the industry's employment.

The total value of shipments for establishments classified in this industry was \$5.1 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3452 shipped \$4.6 billion of products considered primary

to the industry, \$253.3 million of secondary products, and had \$238.0 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 95 percent (specialization ratio). In 1982, the specialization ratio was 93 percent.

Establishments in this industry also accounted for 96 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 95 percent. The products primary to industry 3452, no matter in what industry they were produced, appear in table 6a and aggregate to \$4.8 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the bolts, nuts, rivets, and washers industry amounted to \$2.1 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 11 percent of total value of shipments.

## **INDUSTRY 3462, IRON AND STEEL FORGINGS**

This industry is made up of establishments primarily engaged in manufacturing iron and steel forgings, with or without the use of dies. This industry includes establishments primarily engaged in manufacturing metal forgings. These establishments generally operate on a job or order basis, manufacturing forgings for sale to others or for interplant transfer. Establishments which produce metal forgings for incorporation in end products produced in the same establishment are classified on the basis of the end product. Establishments further processing forgings are classified according to the particular product or process.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3462, Iron and Steel Forgings, had employment of 26.6 thousand. The employment figure was 9 percent below the 30.7 thousand reported in 1982. The leading States in employment in 1987 were Ohio, Pennsylvania, Texas, and Wisconsin. This represents a shift from 1982 when Ohio, Wisconsin, Illinois, and Michigan were the leading States.

The total value of shipments of for establishments classified in this industry was \$3.0 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry



3462 shipped \$2.7 billion of products considered primary to the industry, \$267.9 million of secondary products, and had \$65.3 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 91 percent (specialization ratio). In 1982, the specialization ratio was 89 percent.

Establishments in this industry also accounted for 92 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 81 percent. The products primary to industry 3462, no matter in what industry they were produced, appear in table 6a and aggregate to \$2.9 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the iron and steel forgings industry amounted to \$1.6 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 12 percent of total value of shipments.

## **INDUSTRY 3463, NONFERROUS FORGINGS**

This industry is made up of establishments primarily engaged in manufacturing nonferrous forgings, with or without the use of dies. This industry includes establishments primarily engaged in manufacturing metal forgings. These establishments generally operate on a job or order basis, manufacturing forgings for sale to others or for interplant transfer. Establishments which produce metal forgings for incorporation in end products produced in the same establishment are classified on the basis of the end product. Establishments further processing forgings are classified according to the particular product or process.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3463, Nonferrous Forgings, had employment of 7.3 thousand. The employment figure was 8 percent below the 7.9 thousand reported in 1982. Compared with 1986, employment decreased 8 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses. The leading States in employment in 1987 were California, Ohio, Massachusetts, and Michigan. These same States were the leaders in 1982.

The total value of shipments for establishments classified in this industry was \$1.0 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3463 shipped \$808.5 million of products considered primary to the industry, \$136.5 million of secondary products, and had \$58.7 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 86 percent (specialization ratio). In 1982, the specialization ratio was 84 percent.

Establishments in this industry also accounted for 76 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 73 percent. The products primary to industry 3463, no matter in what industry they were produced, appear in table 6a and aggregate to \$1.1 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the nonferrous forgings industry amounted to \$565.6 million. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 5 percent of total value of shipments.

## **INDUSTRY 3465, AUTOMOTIVE STAMPINGS**

This industry is made up of establishments primarily engaged in manufacturing automotive stampings, such as body parts, hubs, and trim. This industry includes establishments primarily engaged in manufacturing metal stampings. These establishments generally operate on a job or order basis, manufacturing metal stampings for sale to others or for interplant transfer. Establishments which produce metal stampings for incorporation in end products produced in the same establishments are classified on the basis of the end product. Establishments further processing stampings are classified according to the particular product or process.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3465, Automotive Stampings, had employment of 119.8 thousand. The employment figure was 32 percent above the 90.5 thousand reported in 1982. The leading States in employment in 1987 were Michigan, Ohio, Indiana, and Illinois accounted for 79 percent of the industry's employment. These same States were the leaders in 1982 when they accounted for 80 percent of the industry's employment.



The total value of shipments for establishments classified in this industry was \$15.3 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3465 shipped \$14.0 billion of products considered primary to the industry, \$765.4 million of secondary products, and had \$523.2 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 95 percent (specialization ratio). In 1982, the specialization ratio was 92 percent.

Establishments in this industry also accounted for 93 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 88 percent. The products primary to industry 3465, no matter in what industry they were produced, appear in table 6a and aggregate to \$15.0 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the automotive stampings industry amounted to \$8.6 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 6 percent of total value of shipments.

## **INDUSTRY 3466, CROWNS AND CLOSURES**

This industry is made up of establishments primarily engaged in manufacturing metal crowns and closures. Products of this industry also are collected in the Current Industrial Report MQ-34H, Closures for Containers.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3466, Crowns and Closures, had employment of 6.1 thousand. The employment figure was 9 percent below the 6.7 thousand reported in 1982. The leading States in employment in 1987 were Connecticut, Illinois, Indiana, and Pennsylvania. This represents a shift from 1982 when Illinois, Pennsylvania, Indiana, and New Jersey were the leading States.

The total value of shipments for establishments classified in this industry was \$819.8 million.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry

3466 shipped \$772.7 million of products considered primary to the industry, \$35.2 million of secondary products, and had \$11.9 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 96 percent (specialization ratio). In 1982, the specialization ratio was 92 percent.

Establishments in this industry also accounted for 95 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 92 percent. The products primary to industry 3466, no matter in what industry they were produced, appear in table 6a and aggregate to \$811.4 million. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the crowns and closures industry amounted to \$443.1 million. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 10 percent of total value of shipments.

## **INDUSTRY 3469, METAL STAMPINGS, N.E.C.**

This industry is made up of establishments primarily engaged in manufacturing metal stampings and spun products, not elsewhere classified, including porcelain enameled products. Products of this industry include household appliance housings and parts; cooking and kitchen utensils; and other nonautomotive job stampings. These establishments generally operate on a job or order basis, manufacturing metal stampings for sale to others or for interplant transfer. Establishments which produce metal stampings for incorporation in end products produced in the same establishment are classified on the basis of the end product. Establishments further processing stampings are classified according to the particular product or process.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3469, Metal Stampings, N.E.C., had employment of 95.5 thousand. The employment figure was 5 percent below the 100.4 thousand reported in 1982. The leading States in employment in 1987 were Illinois, Ohio, California, and Wisconsin, accounting for 40 percent of the industry's employment. This represents a shift from 1982 when Illinois, Ohio, California, and Massachusetts accounted for 41 percent of the industry's employment.



The total value of shipments for establishments classified in this industry was \$8.3 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3469 shipped \$7.2 billion of products considered primary to the industry, \$825.4 million of secondary products, and had \$290.8 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 90 percent (specialization ratio). In 1982, the specialization ratio was 88 percent.

Establishments in this industry also accounted for 91 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 88 percent. The products primary to industry 3469, no matter in what industry they were produced, appear in table 6a and aggregate to \$8.0 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the metal stampings, n.e.c., industry amounted to \$4.0 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 17 percent of total value of shipments.

## INDUSTRY 3471, PLATING AND POLISHING

This industry is made up of establishments primarily engaged in all types of electroplating, plating, anodizing, coloring, and finishing of metals and formed products for the trade. Also included in this industry are establishments which perform these types of activities, on their own account, on purchased metals or formed products. Establishments that both manufacture and finish products are classified according to the products.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3471, Plating and Polishing, had employment of 71.1 thousand. The employment figure was 15 percent above the 61.9 thousand reported in 1982. Compared with 1986, employment increased 8 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses. The leading States in employment in 1987 were California, Michigan, Ohio, and Illinois, accounting for 44 percent of

the industry's employment. This represents a shift from 1982 when California, Illinois, Michigan, and New York accounted for 45 percent of the industry's employment.

The total value of shipments for establishments classified in this industry was \$3.9 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3471 shipped \$3.6 billion of products considered primary to the industry, \$106.1 million of secondary products, and had \$151.2 million of miscellaneous receipts, resales, and contract work.

The products primary to industry 3471, no matter in what industry they were produced, appear in table 6a and aggregate to \$3.8 billion.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the plating and polishing industry amounted to \$1.2 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 20 percent of total value of shipments.

## INDUSTRY 3479, METAL COATING AND ALLIED SERVICES

This industry is made up of establishments primarily engaged in performing the following types of services on metals for the trade: (1) enameling, lacquering, and varnishing metal products; (2) hot dip galvanizing of mill sheets, plates and bars, castings, and formed products fabricated of iron and steel; hot dip coating such items with aluminum, lead, or zinc; retinning cans and utensils; (3) engraving, chasing and etching jewelry, silverware, notarial and other seals, and other metal products for purposes other than printing; and (4) other metal services, not elsewhere classified. Also included in this industry are establishments which perform these types of activities on their own account on purchased metals or formed products. Establishments that both manufacture and finish products are classified according to the products.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3479, Metal Coating and Allied Services, had employment of 41.5 thousand. The employment figure was 19 percent above the 35.0 thousand reported in 1982. The leading States in employment in 1987 were California, Ohio, Michigan, and Illinois, accounting for 45 percent of the



industry's employment. This represents a shift from 1982 when California, Texas, Ohio, and Illinois accounted for 46 percent of the industry's employment.

The total value of shipments for establishments classified in this industry was \$3.9 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3479 shipped \$3.5 billion of products considered primary to the industry, \$271.8 million of secondary products, and had \$155.1 million of miscellaneous receipts, resales, and contract work.

The products primary to industry 3479, no matter in what industry they were produced, appear in table 6a and aggregate to \$3.8 billion.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the metal coating and allied services industry amounted to \$1.9 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 18 percent of total value of shipments.

# Table 1a. Historical Statistics for the Industry: 1987 and Earlier Years

[1987 industry definitions are the same as in the 1972/77 Standard Industrial Classification (SIC) system. Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year <sup>1</sup>	Companies <sup>2</sup> (no.)	All establishments <sup>3</sup>		All employees		Production workers			Value added by manufac- ture <sup>4</sup> (million dollars)	Cost of materials <sup>5</sup> (million dollars)	Value of shipments (million dollars)	New capital expendi- tures <sup>6</sup> (million dollars)	End-of- year inven- tories <sup>4</sup> (million dollars)	Ratios	
		Total (no.)	With 20 employ- ees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						Special- ization <sup>7</sup> (per- cent)	Cover- age <sup>8</sup> (per- cent)
INDUSTRY 3451, SCREW MACHINE PRODUCTS															
1987 Census ----	1 608	1 635	635	42.7	945.3	34.1	72.9	666.1	1 770.5	1 048.9	2 806.2	99.7	355.5	95	93
1986 ASM -----	(NA)	(NA)	(NA)	43.5	908.2	34.6	69.2	658.7	1 776.7	1 158.7	2 928.3	98.5	355.6	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	44.4	892.8	35.8	71.4	640.0	1 870.2	1 179.5	2 947.8	109.4	483.4	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	45.2	882.1	36.9	73.3	641.7	1 778.0	1 167.1	2 903.8	91.9	361.5	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	40.9	737.6	33.0	66.6	518.1	1 448.6	898.9	2 337.8	59.9	315.8	(NA)	(NA)
1982 Census ----	1 744	1 787	643	41.8	718.9	33.7	65.2	503.2	1 328.0	831.6	2 173.1	77.2	297.0	96	94
1981 ASM -----	(NA)	(NA)	(NA)	47.7	786.5	39.4	80.7	557.5	1 471.2	1 061.4	2 537.7	79.4	323.5	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	52.3	777.0	42.8	84.9	557.8	1 476.9	1 055.5	2 520.2	96.4	324.5	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	51.7	739.8	43.9	89.3	537.6	1 534.1	990.9	2 483.0	79.8	312.9	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	48.5	638.4	40.8	82.3	463.0	1 257.4	857.5	2 097.5	80.0	273.5	(NA)	(NA)
1977 Census ----	1 727	1 770	654	43.8	551.6	36.0	74.3	395.5	1 023.9	762.2	1 771.7	71.9	230.6	96	92
1976 ASM -----	(NA)	(NA)	(NA)	40.8	465.6	33.3	67.5	326.0	858.5	613.3	1 456.6	38.2	200.0	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	40.5	433.7	32.8	65.0	308.3	795.4	529.9	1 326.7	47.9	180.0	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	48.3	492.5	40.1	84.0	359.0	979.9	628.2	1 586.6	45.3	218.3	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	48.8	460.2	40.5	86.0	332.9	894.2	601.7	1 480.4	58.5	172.0	(NA)	(NA)
1972 Census ----	1 781	1 804	612	40.5	357.3	33.2	68.2	257.9	648.5	424.3	1 063.8	33.2	115.7	96	90
INDUSTRY 3452, BOLTS, NUTS, RIVETS, AND WASHERS															
1987 Census ----	828	937	471	52.0	1 325.0	38.7	80.5	886.9	2 995.8	2 115.7	5 084.0	150.4	955.5	95	96
1986 ASM -----	(NA)	(NA)	(NA)	49.7	1 197.0	36.6	74.2	800.4	2 640.9	2 061.7	4 713.6	144.5	866.5	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	52.8	1 206.8	38.9	79.2	793.7	2 621.8	2 139.6	4 794.8	138.2	900.8	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	51.0	1 139.0	38.5	78.2	765.3	2 605.8	2 001.1	4 568.7	124.1	973.9	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	49.5	1 040.4	35.7	71.6	689.8	2 224.6	1 691.8	3 897.3	<sup>10</sup> 120.1	975.7	(NA)	(NA)
1982 Census ----	780	903	450	52.2	1 008.1	37.2	69.1	644.6	1 981.2	1 588.1	3 661.3	109.8	945.0	93	95
1981 ASM -----	(NA)	(NA)	(NA)	63.2	1 176.3	47.0	93.4	787.3	2 573.9	1 932.0	4 484.9	148.4	969.3	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	65.8	1 115.2	49.0	97.9	752.2	2 465.2	1 865.9	4 311.5	168.5	927.8	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	69.7	1 114.5	52.4	106.6	769.7	2 465.0	1 981.0	4 366.8	144.9	890.1	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	64.5	986.9	48.9	100.5	678.8	2 113.7	1 745.6	3 811.3	139.5	804.8	(NA)	(NA)
1977 Census ----	722	857	448	60.9	862.4	45.6	93.9	587.6	1 840.3	1 510.1	3 319.5	112.3	714.3	94	94
1976 ASM -----	(NA)	(NA)	(NA)	58.8	754.8	43.8	87.5	509.3	1 656.6	1 306.0	2 939.4	83.7	718.6	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	56.1	651.7	40.6	80.1	433.6	1 459.8	1 123.3	2 581.3	74.2	614.6	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	66.1	749.6	51.2	105.7	530.9	1 775.3	1 281.5	2 966.8	107.6	653.8	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	61.2	649.5	47.3	101.3	451.4	1 442.8	1 005.9	2 438.4	62.4	453.8	(NA)	(NA)
1972 Census ----	580	678	396	60.1	590.7	46.0	96.6	407.7	1 196.8	851.9	2 027.6	55.7	407.8	93	91
INDUSTRY 3462, IRON AND STEEL FORGINGS															
1987 Census ----	379	406	202	26.6	746.5	19.1	37.8	484.3	1 394.0	1 553.5	3 003.6	108.2	610.8	91	92
1986 ASM -----	(NA)	(NA)	(NA)	25.2	675.6	18.3	35.0	449.3	1 247.1	1 368.6	2 602.1	74.4	552.6	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	27.5	728.9	20.1	38.5	487.7	1 309.6	1 509.9	2 857.9	95.6	568.6	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	29.8	754.7	22.0	42.0	519.3	1 386.1	1 531.3	3 014.8	97.3	640.3	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	25.0	597.4	18.5	33.8	402.6	1 103.3	1 247.2	2 380.7	80.2	477.9	(NA)	(NA)
1982 Census ----	336	380	220	30.7	690.7	22.4	40.7	462.9	1 347.6	1 520.7	2 943.5	158.0	618.7	89	81
1981 ASM -----	(NA)	(NA)	(NA)	38.1	845.3	29.3	56.2	594.6	1 855.6	2 040.6	3 864.2	181.0	564.6	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	38.8	780.3	29.8	57.7	555.7	1 544.7	1 918.8	3 475.6	148.6	528.9	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	40.2	759.9	31.3	63.3	562.8	1 557.1	1 970.3	3 490.8	153.8	575.8	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	41.4	725.7	32.6	64.6	538.6	1 474.7	1 739.2	3 191.3	118.3	506.6	(NA)	(NA)
1977 Census ----	312	358	231	39.1	641.5	31.0	60.8	474.8	1 301.4	1 505.4	2 795.7	126.7	452.7	92	84
1976 ASM -----	(NA)	(NA)	(NA)	37.6	537.2	30.4	57.0	400.8	1 126.8	1 228.8	2 353.5	118.7	390.2	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	36.3	490.8	29.4	56.8	371.1	1 046.1	1 165.7	2 198.7	77.5	353.3	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	39.4	503.5	32.4	65.1	392.7	995.3	1 144.6	2 105.3	54.7	382.3	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	38.2	460.6	30.8	63.4	359.0	822.3	918.9	1 720.2	38.2	300.0	(NA)	(NA)
1972 Census ----	252	280	180	34.3	387.2	27.8	55.2	299.5	661.8	761.8	1 416.1	28.1	219.4	92	68
INDUSTRY 3463, NONFERROUS FORGINGS															
1987 Census ----	72	79	41	7.3	218.1	5.4	11.4	145.4	428.2	565.6	1 003.7	29.8	278.7	86	76
1986 ASM -----	(NA)	(NA)	(NA)	7.9	247.2	5.6	10.9	161.3	497.8	586.1	1 086.1	43.8	347.5	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	8.3	245.5	6.0	11.7	159.6	543.6	648.3	1 181.2	45.1	354.5	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	9.1	258.8	6.6	12.7	169.8	516.2	733.5	1 237.4	45.5	393.5	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	8.6	225.7	6.1	11.2	142.1	540.7	572.9	1 151.5	53.7	345.8	(NA)	(NA)
1982 Census ----	59	64	46	7.9	200.7	5.7	10.6	128.7	461.2	569.3	1 093.8	100.3	302.6	84	73
1981 ASM -----	(NA)	(NA)	(NA)	8.6	203.3	6.4	13.3	140.9	510.0	651.2	1 168.5	42.5	288.9	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	9.0	189.7	6.8	13.3	132.0	483.0	604.3	1 048.6	39.0	295.6	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	8.0	158.6	6.0	12.7	116.4	416.9	453.4	823.5	27.4	238.1	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	6.2	115.8	4.7	9.6	83.2	274.9	315.5	569.8	24.6	163.5	(NA)	(NA)
1977 Census ----	43	47	31	5.4	93.7	4.2	8.2	64.8	240.7	234.9	456.7	12.2	123.8	87	67
1976 ASM -----	(NA)	(NA)	(NA)	5.2	84.1	3.8	7.2	57.1	205.8	191.6	401.3	10.5	100.6	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	6.1	86.9	4.5	9.0	60.6	193.0	185.7	386.2	13.8	104.8	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	6.4	88.2	5.0	10.7	64.4	202.0	178.6	354.4	7.1	114.9	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	6.1	74.6	4.6	9.8	54.0	141.2	154.8	283.0	9.0	81.4	(NA)	(NA)
1972 Census ----	40	46	33	5.8	63.7	4.5	9.0	45.4	104.0	118.9	222.5	7.0	60.0	84	63
INDUSTRY 3465, AUTOMOTIVE STAMPINGS															
1987 Census ----	597	713	502	119.8	3 976.9	99.9	213.3	3 157.5	6 659.3	8 582.2	15 251.6	1 285.0	1 153.9	95	93
1986 ASM -----	(NA)	(NA)	(NA)	119.1	3 942.7	99.9	216.5	3 162.5	6 521.2	8 310.9	14 826.5	1 183.0	1 123.2	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	119.2	3 795.5	100.6	217.4	3 058.3	6 850.5	8 183.8	15 037.7	830.6	1 175.1	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	112.4	3 368.9	95.2	203.8								



**Table 1a. Historical Statistics for the Industry: 1987 and Earlier Years—Con.**

[1987 industry definitions are the same as in the 1972/77 Standard Industrial Classification (SIC) system. Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year <sup>1</sup>	Companies <sup>2</sup> (no.)	All establishments <sup>3</sup>		All employees		Production workers			Value added by manufac- ture <sup>4</sup> (million dollars)	Cost of materials <sup>5</sup> (million dollars)	Value of shipments (million dollars)	New capital expend- itures <sup>6</sup> (million dollars)	End-of- year inven- tories <sup>4</sup> (million dollars)	Ratios	
		Total (no.)	With 20 employ- ees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						Spe- cial- ization <sup>7</sup> (per- cent)	Cover- age <sup>8</sup> (per- cent)
INDUSTRY 3465, AUTOMOTIVE STAMPINGS—Con.															
1977 Census ----	495	591	432	132.4	2 446.0	112.5	236.8	1 956.6	4 654.5	5 130.8	9 739.2	292.2	948.3	92	91
1976 ASM -----	(NA)	(NA)	(NA)	123.1	2 024.4	104.1	213.5	1 601.5	3 934.8	4 200.5	8 070.5	176.1	861.5	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	107.4	1 526.8	90.0	173.0	1 178.6	2 872.4	3 247.0	6 116.2	215.5	608.6	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	121.7	1 622.6	102.1	202.1	1 264.6	3 011.6	3 122.6	6 103.0	225.5	734.7	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	135.4	1 743.7	114.1	242.7	1 385.0	3 141.3	2 983.7	6 085.9	171.5	585.6	(NA)	(NA)
1972 Census ----	388	453	364	123.3	1 485.4	103.0	217.5	1 174.6	2 663.8	2 624.5	5 286.0	117.5	447.0	92	92
INDUSTRY 3466, CROWNS AND CLOSURES															
1987 Census ----	44	57	34	6.1	161.6	4.9	10.3	119.8	382.1	443.1	819.8	26.5	151.9	96	95
1986 ASM -----	(NA)	(NA)	(NA)	6.4	159.6	5.1	10.6	116.6	376.7	532.5	914.5	38.7	145.8	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	6.7	161.6	5.3	10.1	120.8	353.7	509.7	862.5	22.0	147.9	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	6.8	158.5	5.5	11.0	119.1	344.8	499.0	805.3	20.2	158.1	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	7.1	161.1	5.7	11.4	121.6	373.0	494.9	866.5	19.8	157.6	(NA)	(NA)
1982 Census ----	48	64	36	6.7	143.5	5.4	10.6	106.8	372.4	441.7	804.8	21.6	140.7	92	92
1981 ASM -----	(NA)	(NA)	(NA)	7.1	143.9	5.8	11.7	107.7	335.0	437.5	765.8	30.1	127.9	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	7.2	128.2	5.8	11.5	96.3	293.3	390.3	678.7	19.4	123.3	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	6.9	114.2	5.6	11.3	86.1	276.8	349.1	631.1	17.0	117.4	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	7.3	108.9	5.9	11.6	81.6	277.0	310.5	574.1	14.1	125.0	(NA)	(NA)
1977 Census ----	42	56	43	7.9	104.8	6.5	12.6	80.2	265.4	283.2	536.9	17.1	121.0	95	86
1976 ASM -----	(NA)	(NA)	(NA)	7.6	96.7	6.3	13.0	75.2	239.0	290.3	522.4	10.7	95.5	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	7.5	88.3	6.1	12.4	67.3	218.0	265.6	479.9	13.3	93.8	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	8.1	83.8	6.7	13.5	63.6	211.9	228.2	431.5	10.5	101.6	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	7.3	72.9	5.9	11.8	54.4	169.7	187.1	355.2	7.8	71.1	(NA)	(NA)
1972 Census ----	42	53	48	8.1	74.1	6.7	13.4	55.1	166.7	180.9	343.5	8.3	62.6	88	83
INDUSTRY 3469, METAL STAMPINGS, N.E.C.															
1987 Census ----	2 707	2 815	1 162	95.5	2 131.9	73.2	146.2	1 402.0	4 311.4	4 034.4	8 331.1	268.9	1 145.3	90	91
1986 ASM -----	(NA)	(NA)	(NA)	95.9	2 067.6	73.3	142.4	1 364.6	4 032.4	3 584.1	7 625.5	256.9	1 076.1	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	107.1	2 216.9	82.6	164.7	1 446.5	4 261.4	3 773.5	8 084.3	305.0	1 193.7	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	110.5	2 193.5	85.7	167.4	1 448.4	4 436.0	4 062.4	8 410.2	290.9	1 310.8	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	102.9	1 920.7	78.6	155.6	1 251.8	3 836.7	3 269.3	7 079.3	192.5	1 147.1	(NA)	(NA)
1982 Census ----	2 718	2 843	1 156	100.4	1 782.7	75.6	146.3	1 154.0	3 414.2	2 986.4	6 437.7	200.1	1 014.7	88	88
1981 ASM -----	(NA)	(NA)	(NA)	112.8	1 796.9	90.4	176.1	1 241.4	3 648.9	3 538.8	7 160.6	217.1	948.9	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	113.8	1 643.5	91.6	175.3	1 134.5	3 353.1	3 215.3	6 577.5	221.5	914.6	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	114.5	1 542.4	93.1	180.2	1 084.3	3 234.5	3 097.2	6 278.2	202.0	918.8	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	106.2	1 356.3	85.6	168.8	932.6	2 705.9	2 664.9	5 329.1	179.3	793.0	(NA)	(NA)
1977 Census ----	2 544	2 663	1 138	103.2	1 225.4	82.0	161.2	842.5	2 451.5	2 318.0	4 735.7	154.7	715.7	88	88
1976 ASM -----	(NA)	(NA)	(NA)	91.9	1 045.6	72.7	142.1	711.2	2 047.7	1 892.2	3 902.1	114.0	596.0	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	83.3	884.5	64.3	123.0	586.8	1 709.0	1 503.4	3 249.6	95.0	507.3	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	101.1	981.2	81.2	159.0	684.8	1 935.6	1 700.8	3 596.8	123.5	604.5	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	101.9	917.0	83.4	165.5	655.8	1 696.7	1 436.5	3 097.5	93.4	483.3	(NA)	(NA)
1972 Census ----	2 277	2 356	982	92.0	781.0	74.2	146.5	554.8	1 461.0	1 247.9	2 688.8	76.7	382.3	86	85
INDUSTRY 3471, PLATING AND POLISHING															
1987 Census ----	3 351	3 451	1 043	71.1	1 335.5	55.9	112.0	884.7	2 633.6	1 235.3	3 866.9	140.2	226.9	( <sup>9</sup> )	( <sup>9</sup> )
1986 ASM -----	(NA)	(NA)	(NA)	65.8	1 179.1	51.5	104.6	784.3	2 252.3	1 149.2	3 408.3	137.7	208.4	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	69.0	1 182.3	55.7	113.3	802.2	2 203.2	1 245.5	3 445.8	160.4	241.1	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	68.7	1 143.4	55.7	112.6	793.9	2 207.8	1 254.8	3 457.4	<sup>10</sup> 184.5	221.6	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	65.7	961.6	52.5	104.9	680.4	1 777.9	1 113.0	2 849.4	79.7	253.4	(NA)	(NA)
1982 Census ----	3 367	3 450	898	61.9	919.0	49.7	98.1	631.9	1 693.9	1 038.4	2 731.4	109.2	225.5	( <sup>9</sup> )	( <sup>9</sup> )
1981 ASM -----	(NA)	(NA)	(NA)	62.0	855.4	50.2	98.6	598.8	1 613.1	969.6	2 594.6	102.4	163.2	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	63.1	803.6	52.1	101.5	551.6	1 613.9	956.5	2 556.9	105.1	205.7	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	64.1	729.9	53.8	106.1	508.8	1 487.8	928.6	2 412.7	110.3	151.1	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	65.9	724.1	55.4	111.5	507.2	1 413.1	784.3	2 194.9	194.6	140.4	(NA)	(NA)
1977 Census ----	3 344	3 447	904	61.2	634.8	51.2	101.3	446.1	1 181.8	674.1	1 848.5	73.2	128.3	( <sup>9</sup> )	( <sup>9</sup> )
1976 ASM -----	(NA)	(NA)	(NA)	58.5	545.8	49.2	94.6	384.1	1 092.1	524.9	1 610.0	70.6	109.8	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	51.2	467.0	42.2	81.6	318.1	861.1	443.7	1 319.0	47.8	89.8	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	55.8	477.3	46.4	89.0	333.9	949.5	386.9	1 332.8	51.1	83.3	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	60.9	478.4	50.5	99.2	347.5	880.9	384.1	1 263.7	39.5	72.0	(NA)	(NA)
1972 Census ----	3 180	3 264	825	54.6	403.1	45.2	89.2	289.5	741.2	294.8	1 034.5	40.2	51.3	( <sup>9</sup> )	( <sup>9</sup> )
INDUSTRY 3479, METAL COATING AND ALLIED SERVICES															
1987 Census ----	1 699	1 814	616	41.5	831.5	32.3	65.0	558.8	1 995.4	1 936.9	3 922.6	105.3	417.3	( <sup>9</sup> )	( <sup>9</sup> )
1986 ASM -----	(NA)	(NA)	(NA)	42.7	824.2	32.8	66.1	545.9	1 735.0	1 824.2	3 573.7	137.9	361.6	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	43.3	814.2	34.2	68.3	527.0	1 641.2	1 618.7	3 253.2	150.5	350.4	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	40.6	715.5	32.5	65.1	479.2	1 502.7	1 525.8	3 008.3	<sup>10</sup> 111.3	349.6	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	33.2	579.6	25.7	53.2	396.0	1 154.5	1 235.2	2 391.9	88.9	261.6	(NA)	(NA)
1982 Census ----	1 524	1 620	507	35.0	599.1	27.5	54.1	403.7	1 202.6	1 195.9	2 393.4	91.0	292.1	( <sup>9</sup> )	( <sup>9</sup> )
1981 ASM -----	(NA)	(NA)	(NA)	39.6	623.3	32.0	65.4	440.6	1 399.9	1 137.4	2 528.6	136.8	194.7	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	38.5	541.4	31.2	60.9	383.5	1 175.3	1 094.7	2 278.7	53.7	205.7	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	38.1	516.3	31.0	61.4	371.3	1 124.8	1 037.9	2 156.5	81.8	206.6	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	33.7	415.3	27.2	54.5	285.8	895.5	937.6	1 825.1	70.9	175.2	(NA)	(NA)
1977 Census ----	1 556	1 648	469	32.3	373.7	25.8	52.2	260.2	781.1	831.7	1 607.7	47.9	159.0	( <sup>9</sup> )	( <sup>9</sup> )
1976 ASM -----	(NA)	(NA)	(NA)	31.9	356.6	25.3	51.1	260.0	726.7	583.1	1 490.7	39.2	130.9	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	30.3	318.7	23.8	48.0	230.3	579.7	649.5	1 065.5	56.4	99.2	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	33.5	302.9	26.6	52.9	219.1	561.8	607.4	973.1	44.8	122.4	(NA)	(NA)
1973 ASM -----															

<sup>1</sup>In annual survey of manufactures (ASM) years, data are estimates based on a representative sample of establishments canvassed annually and may differ from results of a complete canvass of all establishments. ASM publication shows percentage standard errors. Unless otherwise noted, for data prior to 1972, see 1972 Census of Manufactures, vol. II, table 1a of the Industry chapter.</

**Table 1a. Historical Statistics for the Industry: 1987 and Earlier Years—Con.**

<sup>4</sup>Beginning with the 1982 Census of Manufactures, all respondents were requested to report their inventories at (the lower of) cost or market prior to adjustment to LIFO cost. This is a change from prior Censuses and annual surveys of manufactures in which respondents were permitted to value their inventories using any generally accepted accounting method. Consequently, inventories and value added by manufacture are not comparable to prior-year data.

<sup>5</sup>Detailed data on materials consumed by type are shown in table 7.

<sup>6</sup>Detailed data on new machinery and equipment expenditures are provided in table 3c.

<sup>7</sup>Represents ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for establishments classified in the industry.

<sup>8</sup>Represents ratio of primary products shipped by establishments classified in industry to total shipments of such products by all manufacturing establishments, wherever classified.

<sup>9</sup>Relationships are not meaningful because of predominance of miscellaneous receipts, particularly receipts of contract and commission work on materials owned by others.

<sup>10</sup>Estimates for new capital expenditures have associated standard error of 15 percent or more and may be of limited reliability. Estimates for other data items are of acceptable reliability.

**Table 1b. Selected Operating Ratios for the Industry: 1987 and Earlier Years**

[1987 industry definitions are the same as in the 1972/77 Standard Industrial Classification (SIC) system. Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
<b>INDUSTRY 3451, SCREW MACHINE PRODUCTS</b>									
1987 Census.....	22 138	80	2 138	9.14	37	71	41 464	53	24.29
1986 ASM.....	20 878	80	2 000	9.52	40	71	40 844	51	25.67
1985 ASM.....	20 108	81	1 994	8.96	40	70	42 122	48	26.19
1984 ASM.....	19 515	82	1 986	8.75	40	71	39 336	50	24.26
1983 ASM.....	18 034	81	2 018	7.78	38	70	35 418	51	21.75
1982 Census.....	17 198	81	1 935	7.72	38	71	31 770	54	20.37
1981 ASM.....	16 488	83	2 048	6.91	42	73	30 843	53	18.23
1980 ASM.....	14 856	82	1 984	6.57	42	73	28 239	53	17.40
1979 ASM.....	14 309	85	2 034	6.02	40	70	29 673	48	17.18
1978 ASM.....	13 162	84	2 017	5.63	41	71	25 926	51	15.28
1977 Census.....	12 593	82	2 064	5.32	43	74	23 377	54	13.78
1976 ASM.....	11 411	82	2 027	4.83	42	74	21 042	54	12.72
1975 ASM.....	10 708	81	1 982	4.74	40	73	19 640	55	12.24
1974 ASM.....	10 196	83	2 095	4.27	40	71	20 288	50	11.67
1973 ASM.....	9 430	83	2 123	3.87	41	72	18 324	51	10.40
1972 Census.....	8 822	82	2 054	3.78	40	73	16 012	55	9.51
<b>INDUSTRY 3452, BOLTS, NUTS, RIVETS, AND WASHERS</b>									
1987 Census.....	25 481	74	2 080	11.02	42	68	57 612	44	37.21
1986 ASM.....	24 084	74	2 027	10.79	44	69	53 137	45	35.59
1985 ASM.....	22 856	74	2 036	10.02	45	70	49 655	46	33.10
1984 ASM.....	22 333	75	2 031	9.79	44	69	51 094	44	33.32
1983 ASM.....	21 018	72	2 006	9.63	43	70	44 941	47	31.07
1982 Census.....	19 312	71	1 858	9.33	43	71	37 954	51	28.67
1981 ASM.....	18 612	74	1 987	8.43	43	69	40 726	46	27.56
1980 ASM.....	16 948	74	1 998	7.68	43	69	37 465	45	25.18
1979 ASM.....	15 989	75	2 034	7.22	45	71	35 366	45	23.12
1978 ASM.....	15 300	76	2 055	6.75	46	72	32 771	47	21.03
1977 Census.....	14 160	75	2 059	6.26	45	71	30 218	47	19.60
1976 ASM.....	12 836	74	1 998	5.82	44	70	28 173	46	18.93
1975 ASM.....	11 616	72	1 973	5.41	44	69	26 021	45	18.22
1974 ASM.....	11 340	77	2 064	5.02	43	68	26 858	42	16.80
1973 ASM.....	10 612	77	2 142	4.46	41	68	23 575	45	14.24
1972 Census.....	9 828	77	2 100	4.22	42	71	19 913	49	12.39
<b>INDUSTRY 3462, IRON AND STEEL FORGINGS</b>									
1987 Census.....	28 064	72	1 979	12.81	52	77	52 406	54	36.88
1986 ASM.....	26 809	73	1 913	12.84	53	79	49 488	54	35.63
1985 ASM.....	26 505	73	1 915	12.67	53	78	47 622	56	34.02
1984 ASM.....	25 325	74	1 909	12.36	51	76	46 513	54	33.00
1983 ASM.....	23 896	74	1 827	11.91	52	77	44 132	54	32.64
1982 Census.....	22 498	73	1 817	11.37	52	75	43 896	51	33.11
1981 ASM.....	22 186	77	1 918	10.58	53	75	48 703	46	33.02
1980 ASM.....	20 110	77	1 936	9.63	55	78	39 812	51	26.77
1979 ASM.....	18 902	78	2 022	8.89	56	78	38 734	49	24.60
1978 ASM.....	17 528	79	1 982	8.34	54	77	35 621	49	22.83
1977 Census.....	16 406	79	1 961	7.81	54	77	33 284	49	21.40
1976 ASM.....	14 287	81	1 875	7.03	52	75	29 968	48	19.77
1975 ASM.....	13 520	81	1 932	6.53	53	75	28 818	47	18.42
1974 ASM.....	12 779	82	2 009	6.03	54	78	25 261	51	15.29
1973 ASM.....	12 057	81	2 058	5.66	53	80	21 526	56	12.97
1972 Census.....	11 288	81	1 986	5.43	54	81	19 294	59	11.99
<b>INDUSTRY 3463, NONFERROUS FORGINGS</b>									
1987 Census.....	29 877	74	2 111	12.75	56	78	58 658	51	37.56
1986 ASM.....	31 291	71	1 946	14.80	54	77	63 013	50	45.67
1985 ASM.....	29 578	72	1 950	13.64	55	76	65 494	45	46.46
1984 ASM.....	28 439	73	1 924	13.37	59	80	56 725	50	40.65
1983 ASM.....	26 244	71	1 836	12.69	50	69	62 872	42	48.28
1982 Census.....	25 405	72	1 860	12.14	52	70	58 380	44	43.51
1981 ASM.....	23 639	74	2 078	10.59	56	73	59 302	40	38.35
1980 ASM.....	21 077	76	1 956	9.92	58	76	53 667	39	36.32
1979 ASM.....	19 825	75	2 117	9.17	55	74	52 113	38	32.83
1978 ASM.....	18 677	76	2 043	8.67	55	76	44 339	42	28.64
1977 Census.....	17 351	78	1 952	7.90	51	72	44 574	39	29.35
1976 ASM.....	16 173	73	1 895	7.93	48	69	39 577	41	28.58
1975 ASM.....	14 245	74	2 000	6.73	48	71	31 639	45	21.44
1974 ASM.....	13 781	78	2 140	6.02	50	75	31 563	44	18.88
1973 ASM.....	12 229	75	2 130	5.51	55	81	23 148	53	14.41
1972 Census.....	10 982	78	2 000	5.04	53	82	17 931	61	11.56

See footnotes at end of table.



**Table 1b. Selected Operating Ratios for the Industry: 1987 and Earlier Years—Con.**

[1987 industry definitions are the same as in the 1972/77 Standard Industrial Classification (SIC) system. Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
<b>INDUSTRY 3465, AUTOMOTIVE STAMPINGS</b>									
1987 Census.....	33 196	83	2 135	14.80	56	82	55 587	60	31.22
1986 ASM.....	33 104	84	2 167	14.61	56	83	54 754	60	30.12
1985 ASM.....	31 841	84	2 161	14.07	54	80	57 471	55	31.51
1984 ASM.....	29 972	85	2 141	13.33	54	78	59 002	51	32.54
1983 ASM.....	28 256	84	2 123	12.63	52	77	55 999	50	31.41
1982 Census.....	25 332	82	1 949	12.34	53	79	45 463	56	28.34
1981 ASM.....	25 171	83	1 909	12.39	51	78	46 737	54	29.40
1980 ASM.....	22 334	83	1 860	11.15	50	77	41 452	54	26.83
1979 ASM.....	20 371	85	1 955	9.68	53	77	39 425	52	23.75
1978 ASM.....	19 327	85	2 033	8.94	52	77	37 894	51	21.85
1977 Census.....	18 474	85	2 105	8.26	53	78	35 155	53	19.66
1976 ASM.....	16 445	85	2 051	7.50	52	77	31 964	51	18.43
1975 ASM.....	14 216	84	1 922	6.81	53	78	26 745	53	16.60
1974 ASM.....	13 332	84	1 979	6.26	51	78	24 746	54	14.90
1973 ASM.....	12 878	84	2 127	5.71	49	78	23 200	56	12.94
1972 Census.....	12 047	84	2 112	5.40	50	78	21 604	56	12.25
<b>INDUSTRY 3466, CROWNS AND CLOSURES</b>									
1987 Census.....	26 492	80	2 102	11.63	54	74	62 639	42	37.10
1986 ASM.....	24 937	80	2 078	11.00	58	76	58 859	42	35.54
1985 ASM.....	24 119	79	1 906	11.96	59	78	52 791	46	35.02
1984 ASM.....	23 308	81	2 000	10.83	62	82	50 706	46	31.35
1983 ASM.....	22 690	80	2 000	10.67	57	76	52 535	43	32.72
1982 Census.....	21 417	81	1 963	10.08	55	73	55 582	39	35.13
1981 ASM.....	20 267	82	2 017	9.21	57	76	47 183	43	28.63
1980 ASM.....	17 805	81	1 983	8.37	58	76	40 736	44	25.50
1979 ASM.....	16 550	81	2 018	7.62	55	73	40 116	41	24.50
1978 ASM.....	14 917	81	1 966	7.03	54	73	37 945	39	23.88
1977 Census.....	13 265	82	1 938	6.37	53	72	33 595	39	21.06
1976 ASM.....	12 723	83	2 063	5.78	56	74	31 447	40	18.38
1975 ASM.....	11 773	81	2 033	5.43	55	74	29 067	41	17.58
1974 ASM.....	10 345	83	2 015	4.71	53	72	26 160	40	15.70
1973 ASM.....	9 986	81	2 000	4.61	53	73	23 247	43	14.38
1972 Census.....	9 148	83	2 000	4.11	53	74	20 580	44	12.44
<b>INDUSTRY 3469, METAL STAMPINGS, N.E.C.</b>									
1987 Census.....	22 324	77	1 997	9.59	48	74	45 146	49	29.49
1986 ASM.....	21 559	76	1 943	9.58	47	74	42 048	51	28.32
1985 ASM.....	20 699	77	1 994	8.78	47	74	39 789	52	25.87
1984 ASM.....	19 850	78	1 953	8.65	48	74	40 145	49	26.50
1983 ASM.....	18 665	76	1 980	8.04	46	73	37 286	50	24.66
1982 Census.....	17 755	75	1 935	7.89	46	74	34 006	52	23.34
1981 ASM.....	15 929	80	1 948	7.05	49	75	32 348	49	20.72
1980 ASM.....	14 442	80	1 914	6.47	49	74	29 465	49	19.13
1979 ASM.....	13 470	81	1 936	6.02	49	74	28 249	48	17.95
1978 ASM.....	12 771	81	1 972	5.52	50	75	25 479	50	16.03
1977 Census.....	11 874	79	1 966	5.23	49	75	23 755	50	15.21
1976 ASM.....	11 377	79	1 955	5.00	48	75	22 282	51	14.41
1975 ASM.....	10 618	77	1 913	4.77	46	73	20 516	52	13.89
1974 ASM.....	9 705	80	1 958	4.31	47	75	19 145	51	12.17
1973 ASM.....	8 999	82	1 984	3.96	46	76	16 651	54	10.25
1972 Census.....	8 489	81	1 974	3.79	46	75	15 880	53	9.97
<b>INDUSTRY 3471, PLATING AND POLISHING</b>									
1987 Census.....	18 783	79	2 004	7.90	32	66	37 041	51	23.51
1986 ASM.....	17 919	78	2 031	7.50	34	68	34 229	52	21.53
1985 ASM.....	17 134	81	2 034	7.08	36	70	31 930	54	19.45
1984 ASM.....	16 643	81	2 022	7.05	36	69	32 137	52	19.61
1983 ASM.....	14 636	80	1 998	6.49	39	73	27 061	54	16.95
1982 Census.....	14 846	80	1 974	6.44	38	72	27 365	54	17.27
1981 ASM.....	13 796	81	1 964	6.07	37	70	26 018	53	16.36
1980 ASM.....	12 735	83	1 948	5.43	37	69	25 577	50	15.90
1979 ASM.....	11 386	84	1 972	4.80	38	69	23 211	49	14.02
1978 ASM.....	10 987	84	2 013	4.55	36	69	21 443	51	12.67
1977 Census.....	10 372	84	1 979	4.40	36	71	19 310	54	11.67
1976 ASM.....	9 329	84	1 923	4.06	33	67	18 668	50	11.54
1975 ASM.....	9 121	82	1 934	3.90	34	69	16 818	54	10.55
1974 ASM.....	8 553	83	1 918	3.75	29	65	17 016	50	10.67
1973 ASM.....	7 855	83	1 964	3.50	30	68	14 465	54	8.88
1972 Census.....	7 382	83	1 973	3.25	28	67	13 575	54	8.31
<b>INDUSTRY 3479, METAL COATING AND ALLIED SERVICES</b>									
1987 Census.....	20 036	78	2 012	8.60	49	71	48 082	42	30.70
1986 ASM.....	19 302	77	2 015	8.26	51	74	40 632	48	26.25
1985 ASM.....	18 803	79	1 997	7.72	50	75	37 903	50	24.03
1984 ASM.....	17 623	80	2 003	7.36	51	75	37 012	48	23.08
1983 ASM.....	17 457	77	2 070	7.44	52	76	34 774	50	21.70
1982 Census.....	17 117	79	1 967	7.46	50	75	34 360	50	22.23
1981 ASM.....	15 739	81	2 044	6.74	45	70	35 351	45	21.41
1980 ASM.....	14 062	81	1 952	6.30	48	72	30 527	46	19.30
1979 ASM.....	13 551	81	1 981	6.05	48	72	29 522	46	18.32
1978 ASM.....	12 323	81	2 004	5.24	51	74	26 573	46	16.43

See footnotes at end of table.

**Table 1b. Selected Operating Ratios for the Industry: 1987 and Earlier Years—Con.**

[1987 industry definitions are the same as in the 1972/77 Standard Industrial Classification (SIC) system. Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
<b>INDUSTRY 3479, METAL COATING AND ALLIED SERVICES—Con.</b>									
1977 Census.....	11 569	80	2 023	4.98	52	75	24 183	48	14.96
1976 ASM.....	11 178	79	2 020	5.09	39	63	22 781	49	14.22
1975 ASM.....	10 518	79	2 017	4.80	61	91	19 132	55	12.08
1974 ASM.....	9 041	79	1 989	4.14	62	94	16 770	54	10.62
1973 ASM.....	8 348	82	2 048	3.59	51	79	14 082	59	8.39
1972 Census.....	8 010	82	1 933	3.58	47	78	13 739	58	8.72

Note: For qualifications of data, see footnotes on table 1a.

**Table 2. Industry Statistics for Selected States: 1987 and 1982**

[Excludes data for auxiliaries. States with 150 employees or more are shown. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1987											1982		
	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees <sup>2</sup> (1,000)	Value added by manufacture (million dollars)
		Total (no.)	With 20 employees or more (no.)	Number <sup>2</sup> (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						
<b>INDUSTRY 3451, SCREW MACHINE PRODUCTS</b>														
United States .....	E1	1 635	635	42.7	945.3	34.1	72.9	666.1	1 770.5	1 048.9	2 806.2	99.7	41.8	1 328.0
Arizona .....	E1	11	4	.3	8.6	.3	.6	7.0	17.2	4.2	21.4	.8	AA	(D)
California .....	E1	171	57	3.9	94.9	3.2	6.9	65.7	167.4	70.8	237.5	7.5	3.4	105.6
Connecticut .....	E1	131	48	3.5	73.7	2.7	5.5	49.8	134.3	56.4	189.3	6.2	3.3	90.6
Florida .....	E2	37	11	.5	9.8	.4	.9	7.1	18.8	9.3	28.0	.9	.6	17.4
Illinois .....	-	206	82	5.1	116.4	4.0	8.5	79.6	208.1	129.3	337.9	10.8	6.0	199.4
Indiana .....	E1	56	25	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.7	50.3
Iowa .....	-	9	6	.4	7.3	.3	.6	4.8	17.3	10.5	27.6	(D)	.5	17.6
Maryland .....	-	4	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Massachusetts .....	E1	63	23	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	2.0	57.1
Michigan .....	-	229	106	6.8	154.9	5.4	11.7	106.8	312.5	245.4	554.7	(D)	6.0	226.0
Minnesota .....	E1	37	16	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.1	37.6
Missouri .....	E1	34	16	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.8	28.5
Nebraska .....	-	6	3	.2	4.5	.2	.5	3.5	7.2	3.8	10.8	.2	.2	4.5
New Hampshire .....	E1	13	4	.2	3.4	.1	.3	2.6	6.5	2.7	9.2	(D)	(NA)	(NA)
New Jersey .....	E1	75	21	1.6	36.6	1.2	2.6	26.1	64.0	35.1	99.3	1.9	2.1	58.7
New York .....	E1	108	46	3.5	72.4	2.6	5.6	47.9	133.5	96.1	227.1	5.8	2.9	95.6
North Carolina .....	E1	11	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Ohio .....	-	163	70	4.8	105.3	3.8	8.2	73.7	207.5	134.5	341.4	10.2	4.5	143.8
Oregon .....	E1	13	5	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.2	9.2
Pennsylvania .....	-	51	18	1.1	21.4	.9	1.8	15.3	41.2	18.5	59.3	(D)	1.4	42.1
Rhode Island .....	E3	32	6	.5	8.7	.4	.8	6.5	14.1	8.1	22.2	.6	CC	(D)
South Carolina .....	-	8	4	.2	5.1	.2	.3	2.9	11.2	3.3	14.5	(D)	(NA)	(NA)
Tennessee .....	-	11	7	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Texas .....	E2	27	6	.5	9.5	.4	.8	6.5	16.8	9.9	26.7	(D)	.5	19.6
Vermont .....	-	4	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Washington .....	E1	9	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Wisconsin .....	-	65	24	1.6	33.0	1.3	2.9	25.2	60.7	29.3	89.3	11.9	1.3	41.6
<b>INDUSTRY 3452, BOLTS, NUTS, RIVETS, AND WASHERS</b>														
United States .....	E1	937	471	52.0	1 325.0	38.7	80.5	886.9	2 995.8	2 115.7	5 084.0	150.4	52.2	1 981.2
Alabama .....	E3	11	7	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Arizona .....	-	6	4	.2	4.1	.2	.3	2.8	10.3	3.5	14.1	.1	(NA)	(NA)
Arkansas .....	E8	5	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.2	4.4
California .....	-	116	62	11.2	313.1	8.5	18.1	216.5	712.5	273.0	964.8	38.2	9.3	404.9
Connecticut .....	E1	39	21	1.9	54.2	1.3	2.9	32.3	117.6	79.8	197.8	5.0	2.5	99.0
Florida .....	E4	17	6	.8	15.3	.6	1.2	10.6	31.9	20.3	51.2	1.5	.8	21.7
Illinois .....	-	132	67	8.3	209.6	6.3	13.3	142.7	459.9	396.6	853.7	26.3	8.4	289.3
Indiana .....	-	26	17	1.3	29.2	1.0	2.1	18.9	78.2	51.2	129.5	3.6	EE	(D)
Iowa .....	E1	7	4	.5	10.8	.4	.8	7.9	20.0	26.3	46.2	(D)	.4	10.2
Kentucky .....	-	10	6	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.9	31.4
Massachusetts .....	E2	32	14	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	2.4	80.9
Michigan .....	-	109	64	5.5	149.7	4.3	8.8	108.5	394.3	324.3	707.7	17.8	3.4	161.5
Minnesota .....	-	11	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	12.2
Mississippi .....	E2	4	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Missouri .....	E2	14	6	.3	6.9	.2	.5	4.5	14.7	11.5	26.1	.4	.2	5.9
New Jersey .....	E1	43	22	2.3	58.5	1.5	3.3	35.5	119.4	78.3	201.0	7.5	2.1	99.4
New York .....	E1	52	22	2.3	53.7	1.5	2.9	28.4	110.9	70.5	175.4	4.1	2.0	77.4
North Carolina .....	-	8	4	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.8	22.6
Ohio .....	E1	93	44	4.1	107.7	2.9	6.0	71.3	256.6	222.7	481.7	16.4	4.8	186.0
Pennsylvania .....	-	53	31	4.7	118.7	3.5	7.1	79.2	252.1	150.4	407.2	8.8	6.2	213.0

See footnotes at end of table.



Table 2. Industry Statistics for Selected States: 1987 and 1982—Con.

[Excludes data for auxiliaries. States with 150 employees or more are shown. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1987											1982		
	All establishments			All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees <sup>2</sup> (1,000)	Value added by manufacture (million dollars)
	E <sup>1</sup>	Total (no.)	With 20 employees or more (no.)	Number <sup>2</sup> (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						
<b>INDUSTRY 3452, BOLTS, NUTS, RIVETS, AND WASHERS—Con.</b>														
Rhode Island .....	E5	12	8	.5	10.8	.4	.8	8.0	20.8	15.5	36.1	.7	CC	(D)
South Carolina .....	E1	5	2	.2	3.4	.2	.3	2.7	4.7	4.3	9.0	(D)	(NA)	(NA)
Tennessee .....	E1	11	4	.4	7.6	.3	.6	5.7	16.3	13.2	30.1	.4	CC	(D)
Texas .....	E3	38	13	1.0	22.6	.7	1.5	13.5	46.8	39.6	88.3	2.8	1.4	52.7
Virginia .....	-	6	5	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Wisconsin .....	E1	25	15	1.1	24.1	.8	1.6	15.9	60.5	41.1	101.7	1.7	.9	36.1
<b>INDUSTRY 3462, IRON AND STEEL FORGINGS</b>														
United States .....	E1	406	202	26.6	746.5	19.1	37.8	484.3	1 394.0	1 553.5	3 003.6	108.2	30.7	1 347.6
Alabama .....	-	7	2	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
California .....	E2	35	11	1.1	32.0	.8	1.6	20.9	69.5	97.3	169.6	(D)	1.0	64.6
Connecticut .....	E1	6	4	.5	11.5	.4	.8	6.6	23.9	21.2	44.8	1.0	.4	13.7
Illinois .....	E2	43	25	2.5	72.6	1.8	3.7	41.4	157.3	145.4	302.4	10.3	4.0	151.2
Indiana .....	-	11	5	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Iowa .....	E3	7	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	11.9
Kansas .....	-	2	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Kentucky .....	-	5	3	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Massachusetts .....	-	8	4	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Michigan .....	E1	43	21	2.4	71.3	1.9	3.9	51.4	175.5	167.7	341.8	(D)	3.2	152.6
New Jersey .....	E2	11	1	.3	8.6	.2	.4	4.8	16.1	13.8	28.9	.2	BB	(D)
New York .....	E2	18	12	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.9	40.6
North Carolina .....	E1	4	2	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Ohio .....	-	51	36	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Pennsylvania .....	-	38	24	3.2	87.8	2.3	4.5	55.8	131.7	209.1	337.0	8.2	2.9	113.9
South Carolina .....	-	2	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Tennessee .....	-	11	7	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Texas .....	E1	29	17	3.2	101.9	2.0	3.9	54.4	105.3	146.8	291.7	14.3	2.8	117.4
Wisconsin .....	-	12	9	2.9	92.2	2.2	4.0	66.3	185.0	130.6	326.2	8.6	4.2	182.4
<b>INDUSTRY 3463, NONFERROUS FORGINGS</b>														
United States .....	-	79	41	7.3	218.1	5.4	11.4	145.4	428.2	565.6	1 003.7	29.8	7.9	461.2
California .....	-	19	19	2.4	69.0	1.7	3.8	42.1	131.4	153.2	291.6	9.0	2.8	165.9
Connecticut .....	-	2	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.4	23.0
Illinois .....	E5	5	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.2	7.8
Indiana .....	-	2	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Massachusetts .....	-	3	1	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Michigan .....	E2	12	5	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Nevada .....	-	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Ohio .....	-	5	3	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Pennsylvania .....	-	5	2	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Virginia .....	-	2	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
<b>INDUSTRY 3465, AUTOMOTIVE STAMPINGS</b>														
United States .....	-	713	502	119.8	3 976.9	99.9	213.3	3 157.5	6 659.3	8 582.2	15 251.6	1 285.0	90.5	4 114.4
Alabama .....	-	4	2	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Arkansas .....	-	3	3	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
California .....	E2	26	14	1.9	35.3	1.6	3.1	27.0	51.7	76.6	128.1	4.5	.8	23.6
Florida .....	-	7	5	1.0	17.1	.9	1.9	13.9	38.6	55.4	93.6	1.7	.7	22.1
Georgia .....	-	10	10	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.3	32.8
Illinois .....	-	31	20	6.6	262.1	5.6	12.0	217.3	452.2	509.2	977.7	51.1	6.9	334.4
Indiana .....	-	45	34	11.2	402.4	9.5	20.3	331.1	585.9	774.4	1 354.1	(D)	6.6	318.4
Iowa .....	-	8	7	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Massachusetts .....	E1	8	6	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Michigan .....	-	333	237	48.2	1 580.7	40.0	84.5	1 221.3	2 859.3	3 379.8	6 241.9	387.8	37.4	1 769.8
Minnesota .....	E1	5	2	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Mississippi .....	-	3	3	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Missouri .....	E1	10	8	.6	17.6	.5	1.0	11.3	30.9	33.1	63.7	(D)	.3	12.2
New Jersey .....	E1	6	2	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
New York .....	-	8	4	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Ohio .....	-	129	97	28.5	1 079.2	24.0	53.5	881.7	1 494.6	2 392.4	3 866.5	493.2	21.6	979.4
Pennsylvania .....	-	18	11	5.0	191.6	4.2	9.7	159.6	335.3	305.6	642.1	10.0	FF	(D)
South Carolina .....	-	4	4	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Tennessee .....	-	14	10	1.8	45.3	1.3	2.5	23.4	80.8	217.6	302.0	10.4	1.0	33.1
Texas .....	E1	6	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Utah .....	-	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Virginia .....	-	1	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
West Virginia .....	-	2	2	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Wisconsin .....	-	11	8	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)

See footnotes at end of table.

**Table 2. Industry Statistics for Selected States: 1987 and 1982—Con.**

[Excludes data for auxiliaries. States with 150 employees or more are shown. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1987											1982		
	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees <sup>2</sup> (1,000)	Value added by manufacture (million dollars)
		Total (no.)	With 20 employees or more (no.)	Number <sup>2</sup> (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						
<b>INDUSTRY 3466, CROWNS AND CLOSURES</b>														
United States .....	E1	57	34	6.1	161.6	4.9	10.3	119.8	382.1	443.1	819.8	26.5	6.7	372.4
California .....	-	7	4	.5	13.3	.3	.8	9.0	37.1	27.8	66.0	(D)	.4	37.4
Connecticut .....	-	6	5	.9	18.5	.7	1.4	13.4	34.8	31.4	66.0	(D)	BB	(D)
Illinois .....	E1	6	4	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.6	89.9
Indiana .....	-	6	5	1.2	31.2	1.0	2.0	20.1	72.3	89.4	160.1	(D)	1.2	65.3
New Jersey .....	-	3	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
New York .....	-	4	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Oklahoma .....	-	3	2	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Pennsylvania .....	E2	6	4	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.3	76.1
Texas .....	-	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
<b>INDUSTRY 3469, METAL STAMPINGS, N.E.C.</b>														
United States .....	E1	2 815	1 162	95.5	2 131.9	73.2	146.2	1 402.0	4 311.4	4 034.4	8 331.1	268.9	100.4	3 414.2
Alabama .....	-	20	4	.8	18.3	.7	1.5	15.1	31.3	23.3	54.7	.6	.7	22.9
Arizona .....	-	22	10	.6	14.1	.5	1.0	10.1	29.9	17.7	47.7	(D)	.6	20.1
Arkansas .....	E4	7	3	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
California .....	E2	378	117	8.3	187.9	6.3	12.7	122.8	389.2	257.4	641.9	15.6	9.7	329.2
Colorado .....	E4	23	6	.4	9.7	.3	.7	6.4	19.9	12.8	32.7	(D)	CC	(D)
Connecticut .....	E2	131	51	5.5	123.6	4.2	8.3	85.1	239.4	194.0	430.5	11.7	5.3	177.9
Florida .....	E1	60	18	1.3	25.0	.9	1.7	14.6	53.1	44.5	96.9	2.6	CC	(D)
Georgia .....	E2	28	16	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Illinois .....	E1	320	157	13.0	317.5	10.1	20.6	211.5	670.5	665.1	1 334.0	34.7	11.9	463.4
Indiana .....	E1	86	50	3.8	80.6	2.9	5.7	51.3	159.5	180.6	338.0	(D)	3.0	101.3
Iowa .....	-	20	8	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.3	57.5
Kansas .....	E3	12	5	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Kentucky .....	E1	35	27	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.3	35.5
Maryland .....	E4	18	8	.6	12.2	.4	.9	7.7	21.5	15.0	36.4	(D)	.2	7.8
Massachusetts .....	E2	114	48	3.9	82.7	2.9	6.0	52.2	165.4	113.6	275.9	(D)	8.7	276.5
Michigan .....	E1	142	57	3.5	82.1	2.7	5.6	51.9	188.5	287.5	477.6	(D)	3.0	99.4
Minnesota .....	E1	96	43	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Mississippi .....	E5	18	9	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Missouri .....	E1	57	18	1.5	33.9	1.2	2.1	18.4	69.8	60.0	129.6	8.0	1.6	57.0
New Hampshire .....	E1	15	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
New Jersey .....	E1	159	56	4.2	100.2	3.2	6.0	60.6	182.9	156.6	340.3	8.2	5.4	171.4
New York .....	E2	238	79	6.3	137.9	4.9	9.5	88.9	266.9	197.1	474.3	(D)	7.1	226.2
North Carolina .....	E1	39	17	1.5	32.4	1.1	2.2	18.8	66.4	56.0	121.5	4.4	EE	(D)
Ohio .....	E1	246	127	9.7	214.4	7.6	15.3	145.6	464.5	444.2	912.4	29.2	10.8	421.3
Oklahoma .....	E1	17	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Oregon .....	E1	23	7	.3	7.5	.3	.5	5.2	13.4	10.6	24.1	(D)	.3	14.2
Pennsylvania .....	E1	132	63	5.3	115.5	4.1	8.3	80.3	216.9	214.8	430.1	13.2	5.9	199.8
Rhode Island .....	E2	41	14	.9	17.6	.6	1.3	11.0	36.3	39.0	74.4	2.8	.9	23.5
Tennessee .....	-	32	16	1.0	18.2	.8	1.6	13.2	36.6	72.3	109.1	(D)	1.0	28.9
Texas .....	E2	82	34	2.1	42.9	1.7	3.3	29.5	102.8	64.7	167.2	(D)	EE	(D)
Virginia .....	E2	12	4	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	6.9
Washington .....	-	21	7	.5	12.5	.4	.7	8.4	31.2	52.5	81.8	2.4	BB	(D)
West Virginia .....	-	9	3	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.5	13.7
Wisconsin .....	-	112	65	7.4	173.3	5.4	11.1	111.3	338.0	338.4	672.2	31.1	7.4	227.5
<b>INDUSTRY 3471, PLATING AND POLISHING</b>														
United States .....	E2	3 451	1 043	71.1	1 335.5	55.9	112.0	884.7	2 633.6	1 235.3	3 866.9	140.2	61.9	1 693.9
Alabama .....	E4	35	11	.8	13.2	.6	1.2	9.1	23.8	16.2	39.9	1.1	.7	21.3
Arizona .....	E3	32	11	.7	12.3	.6	1.1	8.0	19.8	11.3	31.0	1.0	.4	12.6
Arkansas .....	E1	15	6	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
California .....	E1	597	184	12.7	227.0	10.1	20.3	152.5	458.2	188.3	643.7	17.8	11.7	300.2
Colorado .....	E3	30	7	.4	6.4	.3	.6	4.3	11.0	5.8	17.1	.3	.3	6.3
Connecticut .....	E1	91	40	2.6	60.7	2.0	3.9	37.9	114.4	68.7	186.2	7.7	2.5	83.6
Florida .....	E4	86	21	1.1	20.9	.9	1.7	13.3	40.3	14.2	53.6	2.1	1.1	23.4
Georgia .....	E5	30	5	.5	8.6	.4	.8	5.7	13.5	7.3	20.6	1.5	.4	10.4
Illinois .....	E1	279	88	5.5	106.3	4.3	8.7	70.4	205.2	99.2	304.4	9.1	5.9	159.5
Indiana .....	E2	93	41	2.6	48.1	2.1	4.3	34.1	98.2	42.1	140.7	7.4	2.2	50.0
Kansas .....	E1	17	5	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Kentucky .....	-	22	9	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	9.5
Louisiana .....	E3	16	3	.2	2.7	.1	.2	1.3	4.5	4.5	9.1	.4	.3	6.4
Maryland .....	E6	25	4	.3	5.2	.2	.4	3.7	10.3	2.8	13.1	.3	.3	6.5
Massachusetts .....	E1	106	47	2.6	51.3	1.9	3.8	32.6	94.4	47.0	141.2	5.8	2.5	70.6
Michigan .....	E1	290	100	7.0	139.0	5.5	11.2	94.0	289.3	144.5	434.8	14.6	5.4	174.1
Minnesota .....	E2	64	30	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.5	45.5
Missouri .....	E1	68	12	2.2	47.5	1.8	3.6	27.9	94.2	41.5	135.0	10.1	1.5	44.8
Nebraska .....	-	7	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
New Hampshire .....	E7	14	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
New Jersey .....	E2	138	34	2.2	43.7	1.6	3.4	26.7	91.0	42.9	133.2	3.0	2.3	67.9
New York .....	E3	228	64	4.3	72.4	3.5	6.9	51.0	148.8	68.7	217.5	7.5	4.9	127.6
North Carolina .....	E3	61	18	1.2	22.0	1.0	1.9	14.5	41.2	28.3	69.0	2.4	.8	24.1
Ohio .....	E1	298	89	6.2	121.7	4.9	10.1	82.6	239.8	115.2	355.3	14.1	4.8	142.9
Oklahoma .....	E3	30	7	.4	7.0	.3	.6	4.3	14.3	7.1	20.9	.4	.5	10.1

See footnotes at end of table.



Table 2. Industry Statistics for Selected States: 1987 and 1982—Con.

[Excludes data for auxiliaries. States with 150 employees or more are shown. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1987											1982		
	All establishments		All employees		Production workers			Value added by manufac- ture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expend- itures (million dollars)	All employ- ees <sup>2</sup> (1,000)	Value added by manufac- ture (million dollars)	
	E <sup>1</sup>	Total (no.)	With 20 employ- ees or more (no.)	Number <sup>2</sup> (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)							Wages (million dollars)
<b>INDUSTRY 3471, PLATING AND POLISHING—Con.</b>														
Oregon .....	E1	28	5	.3	6.3	.3	.5	4.5	9.7	5.6	15.3	.3	.4	11.0
Pennsylvania .....	E1	154	37	2.6	50.6	1.9	3.7	29.8	93.4	48.1	140.9	7.3	1.9	50.9
Rhode Island .....	E2	120	39	2.8	46.8	2.2	4.4	31.9	79.8	42.6	123.7	3.9	2.0	38.3
South Carolina .....	E5	23	6	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Tennessee .....	-	49	22	2.0	33.9	1.7	3.4	24.0	77.4	46.6	123.8	6.9	1.4	32.7
Texas .....	E2	169	38	2.4	43.6	1.8	3.7	27.9	90.5	31.4	121.4	4.0	2.3	67.7
Virginia .....	E1	20	3	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	7.1
Washington .....	E2	42	8	.7	14.7	.5	1.1	9.2	29.5	8.4	37.8	1.1	.6	19.6
West Virginia .....	-	10	5	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Wisconsin .....	E1	90	27	1.8	30.2	1.4	2.8	20.3	58.2	21.7	79.7	2.8	EE	(D)
<b>INDUSTRY 3479, METAL COATING AND ALLIED SERVICES</b>														
<b>United States .....</b>	<b>E1</b>	<b>1 814</b>	<b>616</b>	<b>41.5</b>	<b>831.5</b>	<b>32.3</b>	<b>65.0</b>	<b>558.8</b>	<b>1 995.4</b>	<b>1 936.9</b>	<b>3 922.6</b>	<b>105.3</b>	<b>35.0</b>	<b>1 202.6</b>
Alabama .....	E1	16	6	.4	7.4	.3	.6	5.1	15.4	13.2	28.6	.7	.2	7.9
Arizona .....	E3	19	3	.2	3.2	.1	.3	2.4	6.8	3.6	10.4	.4	(NA)	(NA)
California .....	E2	292	101	5.9	119.4	4.6	9.4	78.2	261.4	244.5	500.9	10.6	5.6	177.8
Colorado .....	E5	21	4	.2	3.4	.2	.4	2.4	7.3	5.5	12.6	.3	.2	6.3
Connecticut .....	E1	45	12	1.3	29.7	1.1	2.1	21.9	59.2	19.7	78.2	3.8	.8	29.4
Florida .....	E2	56	13	.8	13.0	.6	1.2	8.7	30.1	31.2	61.0	2.1	.6	16.7
Georgia .....	-	10	3	.2	3.6	.1	.3	2.5	9.0	5.0	14.1	.4	.3	8.6
Illinois .....	E1	110	39	3.1	75.0	2.3	4.8	47.3	207.6	170.0	376.3	9.7	2.7	101.0
Indiana .....	E1	48	26	2.3	41.5	1.8	3.4	28.6	110.3	88.2	198.1	5.2	1.5	65.5
Kansas .....	-	9	5	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Kentucky .....	-	12	4	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.2	4.6
Louisiana .....	E3	20	9	.4	9.2	.3	.7	6.4	22.8	14.4	37.1	.7	.6	26.3
Maryland .....	E3	20	5	.5	11.1	.4	.7	7.6	25.2	19.5	43.9	2.7	.4	17.7
Massachusetts .....	E4	83	28	1.5	29.1	1.1	2.2	18.3	56.7	28.3	85.1	3.9	1.7	38.9
Michigan .....	E2	157	73	4.6	79.4	3.6	7.1	51.9	172.3	101.5	274.2	(D)	2.4	65.4
Minnesota .....	E1	45	18	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.8	22.7
Missouri .....	E1	38	12	.7	15.9	.6	1.1	11.1	33.0	14.9	47.3	3.8	.5	14.0
New Jersey .....	E2	62	21	1.2	26.8	1.0	2.0	16.8	52.9	40.3	93.0	2.2	1.4	44.8
New York .....	E3	105	28	1.9	36.1	1.5	2.9	24.8	73.3	50.6	124.1	5.2	1.7	43.0
North Carolina .....	-	15	5	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.4	15.9
Ohio .....	-	126	52	4.9	108.3	3.9	7.9	78.2	348.6	541.3	892.3	16.5	3.1	129.8
Oklahoma .....	E2	26	9	.4	7.3	.3	.7	5.2	14.9	12.1	26.8	1.0	.6	25.0
Oregon .....	E4	21	8	.3	6.7	.3	.5	4.8	12.0	9.0	20.9	.5	(NA)	(NA)
Pennsylvania .....	E2	99	35	2.1	47.2	1.6	3.1	30.8	119.8	185.7	305.4	7.3	2.0	72.4
Rhode Island .....	E8	41	8	.5	5.4	.4	.7	3.7	10.0	7.8	17.8	.4	.5	19.5
South Carolina .....	-	11	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Tennessee .....	E1	25	9	.5	8.5	.4	.9	5.9	22.3	17.2	39.3	1.5	(NA)	(NA)
Texas .....	E2	139	41	2.9	61.5	2.2	4.8	39.7	140.0	116.9	255.8	4.7	3.9	153.6
Washington .....	E2	25	6	.4	7.1	.3	.7	5.6	15.8	7.4	22.9	.6	.3	10.6
Wisconsin .....	E2	46	22	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.3	31.0

Note: For qualifications of data, see footnotes on table 1a.

<sup>1</sup>Payroll and sales data for some small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other Government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate the items shown for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown for those States where estimated value of shipments data based on administrative-record data account for 10 percent or more of figure shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

<sup>2</sup>Statistics for some producing States have been withheld to avoid disclosing data for individual companies. However, for States with 150 employees or more, number of establishments is shown and employment-size range is indicated by one of the following symbols: AA—150 to 249 employees; BB—250 to 499 employees; CC—500 to 999 employees; EE—1,000 to 2,499 employees; FF—2,500 employees or more.

Table 3a. Summary Statistics for the Industry: 1987

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Screw machine products (SIC 3451)	Bolts, nuts, rivets, and washers (SIC 3452)	Iron and steel forgings (SIC 3462)	Nonferrous forgings (SIC 3463)	Automotive stampings (SIC 3465)	Crowns and closures (SIC 3466)	Metal stampings, n.e.c. (SIC 3469)	Plating and polishing (SIC 3471)	Metal coating and allied services (SIC 3479)
Companies .....	1 608	828	379	72	597	44	2 707	3 351	1 699
All establishments .....	1 635	937	406	79	713	57	2 815	3 451	1 814
With 1 to 19 employees .....	1 000	466	204	38	211	23	1 653	2 408	1 198
With 20 to 99 employees .....	567	342	131	24	303	14	954	952	550
With 100 employees or more .....	68	129	71	17	199	20	208	91	66
Employment and labor costs:									
Employees .....	42.7	52.0	26.6	7.3	119.8	6.1	95.5	71.1	41.5
Compensation, total .....	1 146.3	1 634.7	974.0	285.7	5 231.7	210.6	2 619.5	1 608.9	1 018.1
Annual payroll .....	945.3	1 325.0	746.5	218.1	3 976.9	161.6	2 131.9	1 335.5	831.5
Fringe benefits .....	200.9	309.7	227.6	67.6	1 254.8	49.0	487.5	273.3	186.7
Social Security and other legally required payments .....	90.0	136.7	89.2	24.6	378.5	18.4	218.5	139.7	85.6
Employer payments and other programs .....	110.9	173.0	138.4	43.0	876.3	30.6	269.0	133.7	101.1

See footnotes at end of table.

Table 3a. **Summary Statistics for the Industry: 1987—Con.**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Screw machine products (SIC 3451)	Bolts, nuts, rivets, and washers (SIC 3452)	Iron and steel forgings (SIC 3462)	Nonferrous forgings (SIC 3463)	Automotive stampings (SIC 3465)	Crowns and closures (SIC 3466)	Metal stampings, n.e.c. (SIC 3469)	Plating and polishing (SIC 3471)	Metal coating and allied services (SIC 3479)
Production workers:									
Average for year ----- 1,000 ..	34.1	38.7	19.1	5.4	99.9	4.9	73.2	55.9	32.3
March ----- do ..	33.9	38.7	19.0	5.4	103.7	4.9	72.4	55.2	31.6
May ----- do ..	33.8	38.4	19.0	5.5	101.5	5.0	72.5	55.4	32.2
August ----- do ..	33.8	38.3	19.2	5.4	94.1	4.9	72.8	55.6	32.2
November ----- do ..	34.4	38.7	19.2	5.3	99.8	4.7	73.9	56.5	32.5
Hours ----- millions ..	72.9	80.5	37.8	11.4	213.3	10.3	146.2	112.0	65.0
January to March ----- do ..	18.1	20.0	9.4	2.9	56.0	2.6	36.0	27.6	15.7
April to June ----- do ..	18.2	20.4	9.6	2.9	54.2	2.7	36.6	27.8	16.3
July to September ----- do ..	17.9	19.9	9.2	2.8	50.0	2.6	36.0	27.7	16.3
October to December ----- do ..	18.6	20.3	9.6	2.8	53.2	2.4	37.7	28.8	16.6
Wages ----- mil dol ..	666.1	886.9	484.3	145.4	3 157.5	119.8	1 402.0	884.7	558.8
Value added by manufacture ----- do ..	1 770.5	2 995.8	1 394.0	428.2	6 659.3	382.1	4 311.4	2 633.6	1 995.4
Cost of materials <sup>1</sup> ----- do ..	1 048.9	2 115.7	1 553.5	565.6	8 582.2	443.1	4 034.4	1 235.3	1 936.9
Materials, parts, containers, etc., consumed <sup>2</sup> ----- do ..	810.0	1 629.6	1 273.2	456.3	8 018.4	412.4	3 461.8	906.8	1 719.5
Resales ----- do ..	30.4	133.1	18.8	2.9	72.3	3.0	125.1	51.7	43.5
Fuels ----- do ..	9.2	29.8	76.3	19.0	67.6	9.5	49.2	70.0	64.0
Purchased electricity ----- do ..	35.4	71.4	81.9	20.8	184.9	11.2	93.6	119.3	67.9
Contract work ----- do ..	163.9	251.8	103.3	66.6	239.0	7.1	304.7	87.4	42.0
Quantity of electric energy used for heat and power:									
Purchased ----- mil kWh ..	604.5	1 126.5	1 545.1	334.1	3 454.6	200.5	1 557.9	2 096.2	1 389.8
Generated less sold ----- do ..	-	(S)	-	-	(D)	(S)	(D)	(D)	-
Total value of shipments ----- mil dol ..	2 806.2	5 084.0	3 003.6	1 003.7	15 251.6	819.8	8 331.1	3 866.9	3 922.6
Primary products ----- do ..	2 578.5	4 592.7	2 670.4	808.5	13 963.1	772.7	7 214.9	3 609.5	3 495.6
Secondary products ----- do ..	137.1	253.3	267.9	136.5	765.4	35.2	825.4	106.1	271.8
Miscellaneous receipts, total ----- do ..	90.7	238.0	65.3	58.7	523.2	11.9	290.8	151.2	155.1
Value of resales ----- do ..	39.2	190.1	20.0	3.7	79.7	3.3	163.0	63.2	57.9
Contract receipts ----- do ..	24.8	17.5	11.4	3.6	32.0	(D)	49.5	72.9	53.8
Other miscellaneous receipts ----- do ..	26.7	30.5	33.9	51.4	411.5	(D)	78.3	15.1	43.4
Inventories by stage of fabrication:									
Beginning of 1987 ----- mil dol ..	330.7	929.4	687.6	292.6	1 105.4	136.9	1 091.7	213.3	372.6
Finished goods ----- do ..	106.4	413.3	85.7	33.1	135.8	55.3	339.5	37.7	96.3
Work in process ----- do ..	127.4	257.9	327.0	180.9	522.8	30.0	302.7	48.5	42.4
Materials and supplies ----- do ..	96.8	258.3	274.9	78.5	446.8	51.5	449.5	127.1	233.9
End of 1987 ----- do ..	355.5	955.5	610.8	278.7	1 153.9	151.9	1 145.3	226.9	417.3
Finished goods ----- do ..	108.0	432.5	56.4	29.3	130.8	60.0	340.8	40.1	91.8
Work in process ----- do ..	139.0	266.2	300.1	174.8	517.7	30.7	316.1	48.0	56.6
Materials and supplies ----- do ..	108.5	256.8	254.3	74.5	505.4	61.1	488.4	138.8	269.0
Primary product specialization ratio ----- percent ..	95	95	91	86	95	96	90	( <sup>3</sup> )	( <sup>3</sup> )
Coverage ratio ----- do ..	93	96	92	76	93	95	91	( <sup>3</sup> )	( <sup>3</sup> )

Note: For qualifications of data, see footnotes on table 1a.

<sup>1</sup>Data on purchased services for the repair of buildings and machinery and for communication services are not included in cost of materials, etc., but are shown in table 3c.<sup>2</sup>Data on materials consumed by type are shown in table 7. Data on amount purchased or transferred from foreign sources are shown in table 3c.<sup>3</sup>See table 1a, footnote 9.Table 3b. **Gross Book Value of Depreciable Assets, Capital Expenditures, Retirements, Depreciation, and Rental Payments: 1987**

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Screw machine products (SIC 3451)	Bolts, nuts, rivets, and washers (SIC 3452)	Iron and steel forgings (SIC 3462)	Nonferrous forgings (SIC 3463)	Automotive stampings (SIC 3465)	Crowns and closures (SIC 3466)	Metal stampings, n.e.c. (SIC 3469)	Plating and polishing (SIC 3471)	Metal coating and allied services (SIC 3479)
Gross book value of depreciable assets:									
Total:									
Beginning of year -----	1 201.0	1 886.3	2 170.3	572.5	7 411.9	303.2	2 860.5	1 492.8	1 380.4
New capital expenditures <sup>1</sup> -----	99.7	150.4	108.2	29.8	1 285.0	26.5	268.9	140.2	105.3
Used capital expenditures -----	22.3	33.7	21.1	.8	47.4	5.1	40.0	21.5	13.6
Retirements -----	18.3	64.0	38.2	11.9	227.7	23.2	109.2	29.2	45.6
End of year -----	1 304.8	2 006.4	2 261.4	591.2	8 516.6	311.5	3 060.3	1 625.3	1 453.7
Buildings and other structures:									
Beginning of year -----	187.5	385.8	406.4	84.9	1 408.0	52.8	726.0	346.1	330.7
New capital expenditures -----	17.2	25.5	13.6	4.0	119.6	2.5	46.0	22.5	18.8
Used capital expenditures -----	6.2	10.5	3.4	.2	7.1	.2	12.3	6.9	4.7
Retirements -----	1.1	5.9	4.3	.2	7.8	5.5	20.3	2.0	6.4
End of year -----	209.8	415.9	419.1	88.8	1 527.0	50.0	764.0	373.5	347.9
Machinery and equipment:									
Beginning of year -----	1 013.5	1 500.5	1 763.8	487.6	6 003.9	250.4	2 134.5	1 146.7	1 049.7
New capital expenditures <sup>1</sup> -----	82.4	124.9	94.6	25.8	1 165.4	24.0	222.9	117.8	86.5
Used capital expenditures -----	16.1	23.2	17.7	.6	40.3	4.8	27.7	14.5	8.9
Retirements -----	17.1	58.1	33.9	11.6	220.0	17.7	88.9	27.2	39.2
End of year -----	1 095.0	1 590.5	1 842.3	502.4	6 989.6	261.5	2 296.3	1 251.8	1 105.8
Depreciation charges during 1987:									
Total -----	93.4	137.0	130.8	35.6	489.7	19.9	236.7	140.6	100.4
Buildings and other structures -----	9.4	16.5	15.5	3.8	37.7	1.9	34.5	18.3	14.6
Machinery and equipment -----	84.0	120.5	115.3	31.8	452.0	18.1	202.2	122.4	85.8
Rental payments:									
Total -----	32.6	44.7	9.3	3.9	51.0	2.3	80.8	61.2	65.6
Buildings and other structures -----	14.6	20.4	3.0	1.9	19.6	1.4	38.9	30.3	28.8
Machinery and equipment -----	18.0	24.3	6.4	2.0	31.4	.9	41.9	30.8	36.8

Note: Retirements and depreciation data for establishments not included in the ASM sample were extrapolated from the historical ratio of retirements or depreciation to assets. These ratios were developed at the industry level.

<sup>1</sup>Data on new machinery and equipment expenditures by type are provided in table 3c.



Table 3c. Supplemental Industry Statistics Based on Sample Estimates: 1987

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Screw machine products (SIC 3451)		Bolts, nuts, rivets, and washers (SIC 3452)		Iron and steel forgings (SIC 3462)		Nonferrous forgings (SIC 3463)	
	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)
Purchased services:								
Cost of purchased services for the repair of—								
Buildings and other structures .....	4.9	(X)	8.4	(X)	6.0	(X)	2.5	(X)
Response coverage ratio (percent) <sup>2</sup> .....	53.1	(X)	66.2	(X)	65.7	(X)	74.9	(X)
Machinery .....	19.4	(X)	40.8	(X)	36.5	(X)	18.2	(X)
Response coverage ratio (percent) <sup>2</sup> .....	60.8	(X)	68.5	(X)	68.5	(X)	76.1	(X)
Cost of purchased communication services .....	4.2	(X)	10.9	(X)	5.1	(X)	1.3	(X)
Response coverage ratio (percent) <sup>2</sup> .....	53.2	(X)	59.0	(X)	68.6	(X)	73.2	(X)
New machinery and equipment expenditures .....	82.4	(X)	124.9	(X)	94.6	(X)	25.8	(X)
Automobiles, trucks, etc., for highway use .....	4.3	19	3.4	14	1.0	13	.5	22
Computers and peripheral data processing equipment .....	4.3	17	7.2	12	6.3	5	.9	11
All other .....	73.9	3	114.2	1	87.3	1	24.4	1
Adjustment ratio <sup>3</sup> .....	1.4	(X)	1.3	(X)	1.3	(X)	1.2	(X)
Cost of materials, components, parts, etc., used .....	810.0	(X)	1 629.6	(X)	1 273.2	(X)	456.3	(X)
Materials purchased or transferred from foreign sources <sup>4</sup> .....	47.3	20	232.9	9	65.6	6	4.1	24
Materials purchased or transferred from domestic sources .....	762.7	2	1 396.6	2	1 207.6	1	452.2	1
Adjustment ratio <sup>3</sup> .....	1.6	(X)	1.3	(X)	1.4	(X)	1.2	(X)

Item	Automotive stampings (SIC 3465)		Crowns and closures (SIC 3466)		Metal stampings, n.e.c. (SIC 3469)		Plating and polishing (SIC 3471)		Metal coating and allied services (SIC 3479)	
	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)
Purchased services:										
Cost of purchased services for the repair of—										
Buildings and other structures .....	42.2	(X)	1.1	(X)	11.1	(X)	6.6	(X)	7.3	(X)
Response coverage ratio (percent) <sup>2</sup> .....	87.4	(X)	61.1	(X)	53.6	(X)	55.7	(X)	71.9	(X)
Machinery .....	330.2	(X)	8.3	(X)	37.0	(X)	35.6	(X)	33.3	(X)
Response coverage ratio (percent) <sup>2</sup> .....	89.3	(X)	61.5	(X)	59.7	(X)	60.4	(X)	77.5	(X)
Cost of purchased communication services .....	19.8	(X)	1.3	(X)	14.7	(X)	8.1	(X)	6.9	(X)
Response coverage ratio (percent) <sup>2</sup> .....	82.3	(X)	70.1	(X)	56.3	(X)	54.9	(X)	74.0	(X)
New machinery and equipment expenditures .....	1 165.4	(X)	24.0	(X)	222.9	(X)	117.8	(X)	86.5	(X)
Automobiles, trucks, etc., for highway use .....	7.9	26	.3	8	15.3	18	10.1	12	3.8	27
Computers and peripheral data processing equipment .....	11.6	4	.3	12	20.2	10	6.7	17	3.6	22
All other .....	1 145.9	1	23.4	1	187.5	3	101.0	3	79.0	3
Adjustment ratio <sup>3</sup> .....	1.0	(X)	1.1	(X)	1.5	(X)	1.3	(X)	1.3	(X)
Cost of materials, components, parts, etc., used .....	8 018.4	(X)	412.4	(X)	3 461.8	(X)	906.8	(X)	1 719.5	(X)
Materials purchased or transferred from foreign sources <sup>4</sup> .....	385.1	4	2.3	49	136.9	30	48.1	16	212.1	14
Materials purchased or transferred from domestic sources .....	7 633.4	1	410.1	1	3 324.9	2	858.7	1	1 507.4	3
Adjustment ratio <sup>3</sup> .....	1.5	(X)	1.8	(X)	1.7	(X)	1.5	(X)	1.6	(X)

<sup>1</sup>For description of relative standard error of estimate, see Qualifications of the Data in appendixes.<sup>2</sup>Measure of extent to which respondents reported each item. Derived for each item by calculating the ratio of weighted employment for those sample establishments that reported the specific inquiry to total employment for all establishments classified in industry. (See appendixes for explanation of sample weight.)<sup>3</sup>Detail has been adjusted upwards to account for nonresponse. Inverse of the ratio shown represents a measure of the response to the inquiry. (See appendixes for further explanation.)<sup>4</sup>Data may understate the true cost of imported parts, components, and supplies since some respondents do not know the origin of these materials. Includes cases where materials were purchased from secondary suppliers or where they were transferred from company-operated warehouses or other distribution points. Direct purchases from foreign suppliers and importers by domestic manufacturing establishments are believed to be reported accurately.

Table 4. Industry Statistics by Employment Size of Establishment: 1987

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and employment size class	E <sup>1</sup>	All estab- lish- ments (no.)	All employees		Production workers			Value added by manufac- ture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expend- itures (million dollars)	End-of- year invento- ries (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)					
<b>INDUSTRY 3451, SCREW MACHINE PRODUCTS</b>												
Total .....	E1	1 635	42.7	945.3	34.1	72.9	666.1	1 770.5	1 048.9	2 806.2	99.7	355.5
Establishments with an average of—												
1 to 4 employees .....	E9	318	.7	12.9	.6	1.1	9.1	26.3	16.0	42.1	1.2	4.6
5 to 9 employees .....	E5	318	2.2	43.2	1.8	3.8	31.7	81.8	43.7	125.3	3.4	12.0
10 to 19 employees .....	E1	364	5.1	101.6	4.0	8.6	73.2	191.1	107.0	297.5	17.1	25.9
20 to 49 employees .....	-	416	12.6	275.8	10.3	21.7	196.1	507.8	298.9	801.5	25.2	64.0
50 to 99 employees .....	-	151	10.3	234.5	8.3	17.7	165.7	438.3	270.5	706.0	24.4	88.4
100 to 249 employees .....	-	60	9.0	207.8	7.3	15.6	150.2	376.8	241.5	615.1	24.0	99.3
250 to 499 employees .....	-	8	2.7	69.6	1.9	4.4	40.1	148.5	71.4	218.6	4.4	38.4
Covered by administrative records <sup>2</sup> .....	E9	522	2.4	36.1	1.9	3.8	25.9	70.4	41.4	111.8	3.2	11.5

See footnotes at end of table.

Table 4. Industry Statistics by Employment Size of Establishment: 1987—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and employment size class	E <sup>1</sup>	All establishments (no.)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)					
<b>INDUSTRY 3452, BOLTS, NUTS, RIVETS, AND WASHERS</b>												
Total	E1	937	52.0	1 325.0	38.7	80.5	886.9	2 995.8	2 115.7	5 084.0	150.4	955.5
Establishments with an average of—												
1 to 4 employees	E9	135	.3	5.5	.2	.4	3.7	12.7	8.5	21.2	.6	3.9
5 to 9 employees	E7	132	.9	18.1	.7	1.4	12.7	40.4	28.9	70.0	1.8	11.1
10 to 19 employees	E6	199	2.8	56.1	2.1	4.3	37.9	119.0	91.5	210.5	6.2	36.0
20 to 49 employees	E2	216	6.9	159.1	5.1	10.7	102.6	362.7	298.9	664.7	18.6	103.9
50 to 99 employees	E1	126	8.5	209.0	6.3	13.2	139.1	484.3	476.1	955.7	22.6	154.6
100 to 249 employees	-	90	13.3	345.4	9.8	20.1	230.5	840.7	659.3	1 491.0	42.6	297.3
250 to 499 employees	-	28	10.2	264.5	7.5	15.6	171.7	615.5	333.5	936.0	31.8	191.9
500 to 999 employees	-	9	9.2	267.3	7.0	14.8	188.8	520.6	219.0	734.9	26.2	156.8
1,000 to 2,499 employees	-	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records <sup>2</sup>	E9	361	3.1	56.7	2.4	4.8	39.0	126.6	84.4	211.0	6.5	38.2
<b>INDUSTRY 3462, IRON AND STEEL FORGINGS</b>												
Total	E1	406	26.6	746.5	19.1	37.8	484.3	1 394.0	1 553.5	3 003.6	108.2	610.8
Establishments with an average of—												
1 to 4 employees	E8	88	.2	3.5	.1	.2	2.3	7.9	8.0	16.4	.4	3.1
5 to 9 employees	E9	45	.3	7.2	.2	.4	4.6	14.2	13.2	27.5	.6	4.7
10 to 19 employees	E7	71	1.0	21.2	.7	1.3	13.6	42.1	44.2	86.8	2.4	16.1
20 to 49 employees	E2	70	2.1	52.9	1.6	3.1	34.1	120.8	115.7	233.1	3.8	40.1
50 to 99 employees	E2	61	4.4	110.3	3.3	6.7	73.5	225.8	259.3	483.6	9.5	95.0
100 to 249 employees	E1	53	8.5	237.3	6.2	12.6	159.4	548.2	563.4	1 120.7	51.3	189.8
250 to 499 employees	-	14	4.9	142.5	3.9	7.8	102.5	214.7	315.1	525.2	15.9	103.3
500 to 999 employees	-	2	5.2	171.5	3.1	5.6	94.4	220.4	234.5	510.2	24.3	158.7
1,000 to 2,499 employees	-	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records <sup>2</sup>	E9	181	1.4	27.8	1.0	1.8	18.1	57.6	54.0	111.6	2.6	19.0
<b>INDUSTRY 3463, NONFERROUS FORGINGS</b>												
Total	-	79	7.3	218.1	5.4	11.4	145.4	428.2	565.6	1 003.7	29.8	278.7
Establishments with an average of—												
1 to 4 employees	E9	20	.1	1.2	(Z)	.1	.8	2.3	2.9	5.2	.2	1.6
5 to 9 employees	E6	9	.1	1.3	(Z)	.1	.7	3.4	3.4	6.8	.2	1.7
10 to 19 employees	E6	9	.1	2.6	.1	.2	1.8	5.9	7.4	13.9	.3	3.8
20 to 49 employees	-	11	.4	8.6	.3	.6	5.0	16.3	24.6	40.9	.7	6.4
50 to 99 employees	E1	13	.9	25.4	.7	1.4	16.1	48.0	55.8	109.0	3.9	15.1
100 to 249 employees	E1	12	2.3	62.7	1.7	3.8	41.5	111.2	131.7	246.8	5.8	53.4
250 to 499 employees	-	3	3.5	116.3	2.6	5.3	79.4	241.1	339.9	581.1	18.6	196.7
500 to 999 employees	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
1,000 to 2,499 employees	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records <sup>2</sup>	E9	30	.2	3.5	.1	.2	2.3	7.6	9.3	16.9	.6	5.3
<b>INDUSTRY 3465, AUTOMOTIVE STAMPINGS</b>												
Total	-	713	119.8	3 976.9	99.9	213.3	3 157.5	6 659.3	8 582.2	15 251.6	1 285.0	1 153.9
Establishments with an average of—												
1 to 4 employees	E9	37	.1	1.6	.1	.1	1.2	2.5	3.3	5.8	.2	.4
5 to 9 employees	E8	51	.4	7.3	.3	.6	5.6	12.9	15.7	28.6	1.0	2.0
10 to 19 employees	E6	123	1.7	42.4	1.4	2.9	31.1	81.5	85.9	166.2	6.6	14.1
20 to 49 employees	E2	158	5.2	128.4	4.1	8.4	84.2	259.6	288.4	548.7	18.4	48.7
50 to 99 employees	E1	145	10.3	241.0	8.0	16.8	159.3	527.6	671.6	1 196.2	43.2	118.0
100 to 249 employees	E1	122	18.6	416.2	14.8	30.5	292.6	918.3	1 142.9	2 056.1	80.5	213.3
250 to 499 employees	E1	43	15.1	339.0	12.3	24.3	248.3	717.2	897.0	1 621.1	26.6	140.8
500 to 999 employees	E1	11	8.2	220.6	7.1	14.7	174.5	377.4	529.5	909.4	41.5	78.2
1,000 to 2,499 employees	-	10	17.7	735.4	14.9	32.3	591.6	1 292.9	1 341.5	2 660.0	98.8	148.1
2,500 employees or more	-	13	42.5	1 845.0	37.0	82.7	1 569.0	2 469.4	3 606.5	6 059.7	968.2	390.1
Covered by administrative records <sup>2</sup>	E9	180	2.2	45.6	1.9	4.0	36.2	75.5	96.8	172.3	6.5	12.1
<b>INDUSTRY 3466, CROWNS AND CLOSURES</b>												
Total	E1	57	6.1	161.6	4.9	10.3	119.8	382.1	443.1	819.8	26.5	151.9
Establishments with an average of—												
1 to 4 employees	E9	4	(Z)	.3	(Z)	(Z)	.2	.5	.9	1.4	(Z)	.2
5 to 9 employees	E8	7	(Z)	1.0	(Z)	.1	.7	.8	2.6	3.4	.1	.7
10 to 19 employees	E5	12	.2	3.1	.1	.3	2.4	3.4	8.9	15.8	.2	2.4
20 to 49 employees	E2	9	.3	9.4	.2	.4	3.9	9.6	11.8	23.0	.4	5.3
50 to 99 employees	-	5	.4	9.4	.3	.6	7.1	27.1	32.1	58.4	1.8	14.1
100 to 249 employees	-	11	1.6	43.5	1.2	2.6	32.0	109.4	133.4	237.2	7.4	44.9
250 to 499 employees	-	8	3.7	97.9	3.0	6.3	73.5	231.4	253.4	480.7	16.5	84.3
500 to 999 employees	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records <sup>2</sup>	E9	14	.1	2.2	.1	.2	1.6	3.4	6.4	9.8	.3	1.6

See footnotes at end of table.



**Table 4. Industry Statistics by Employment Size of Establishment: 1987—Con.**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and employment size class	E¹	All establishments (no.)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)					
INDUSTRY 3469, METAL STAMPINGS, N.E.C.												
Total -----	E1	2 815	95.5	2 131.9	73.2	146.2	1 402.0	4 311.4	4 034.4	8 331.1	268.9	1 145.3
Establishments with an average of—												
1 to 4 employees -----	E8	633	1.3	23.9	1.0	2.0	15.7	50.7	42.4	94.5	2.6	12.2
5 to 9 employees -----	E6	459	3.1	56.7	2.4	4.6	37.5	112.5	87.1	199.6	5.4	22.2
10 to 19 employees -----	E2	561	7.8	160.1	6.0	11.6	105.6	319.7	242.5	559.0	18.4	65.1
20 to 49 employees -----	E2	658	20.6	458.5	15.7	31.7	298.0	886.2	690.3	1 569.2	45.7	194.1
50 to 99 employees -----	E1	296	20.0	460.7	15.2	30.9	294.0	901.9	828.5	1 721.5	48.1	210.9
100 to 249 employees -----	E1	163	23.8	527.5	18.3	36.8	349.9	1 107.2	1 238.7	2 338.4	65.2	329.6
250 to 499 employees -----	-	35	11.5	259.0	9.0	17.9	169.4	588.0	501.1	1 090.9	43.6	154.6
500 to 999 employees -----	-	9	7.2	185.6	5.5	10.6	131.9	345.3	403.8	758.0	39.9	156.7
1,000 to 2,499 employees -----	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records² -----	E9	1 015	4.9	74.2	3.9	7.4	48.7	147.9	124.5	272.4	7.0	33.8
INDUSTRY 3471, PLATING AND POLISHING												
Total -----	E2	3 451	71.1	1 335.5	55.9	112.0	884.7	2 633.6	1 235.3	3 866.9	140.2	226.9
Establishments with an average of—												
1 to 4 employees -----	E8	943	2.0	32.6	1.6	3.0	21.7	68.6	31.9	100.6	2.8	4.9
5 to 9 employees -----	E4	706	4.8	83.7	3.8	7.4	57.0	164.1	63.9	228.1	9.0	11.0
10 to 19 employees -----	E2	759	10.5	189.3	8.2	16.2	127.5	356.2	144.5	500.6	16.8	23.0
20 to 49 employees -----	E1	719	22.0	410.5	17.0	34.6	269.2	774.3	327.8	1 100.2	40.8	62.5
50 to 99 employees -----	E1	233	15.6	307.8	12.0	24.4	199.2	621.3	300.9	924.6	29.2	55.7
100 to 249 employees -----	E2	80	11.3	217.2	9.0	17.9	147.4	462.6	270.2	732.0	23.0	49.5
250 to 499 employees -----	-	8	4.9	94.4	4.1	8.4	62.9	186.5	96.0	280.7	18.7	20.2
500 to 999 employees -----	-	3	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records² -----	E9	1 184	4.3	55.4	3.5	6.3	37.0	112.4	46.3	158.7	4.3	6.7
INDUSTRY 3479, METAL COATING AND ALLIED SERVICES												
Total -----	E1	1 814	41.5	831.5	32.3	65.0	558.8	1 995.4	1 936.9	3 922.6	105.3	417.3
Establishments with an average of—												
1 to 4 employees -----	E9	500	1.0	16.7	.8	1.6	11.1	38.8	33.8	72.6	1.9	6.0
5 to 9 employees -----	E6	332	2.3	40.7	1.7	3.4	27.6	84.1	64.0	148.1	3.4	12.6
10 to 19 employees -----	E3	366	5.0	91.3	3.8	7.5	60.9	194.1	123.9	317.0	8.8	27.2
20 to 49 employees -----	E2	418	12.9	243.5	10.1	20.7	164.8	539.4	354.8	891.6	31.1	79.8
50 to 99 employees -----	E1	132	8.9	185.9	6.9	14.0	122.1	426.0	435.3	857.1	25.5	93.1
100 to 249 employees -----	-	57	8.0	172.2	6.2	12.8	116.9	437.5	585.5	1 019.5	24.3	139.7
250 to 499 employees -----	-	6	3.5	81.1	2.6	5.1	55.4	275.5	339.4	616.6	10.4	59.0
500 to 999 employees -----	-	3	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records² -----	E9	680	2.7	36.8	2.1	3.9	24.3	79.4	73.6	153.1	3.8	12.3

Note: For qualifications of data, see footnotes on table 1a. Data shown as a (D) are included in underscored figures above.

<sup>1</sup>Payroll and sales data for some small single unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other Government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate the items shown for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown for those employment-size classes where estimated data based on administrative-record data account for 10 percent or more of figures shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

<sup>2</sup>Report forms were not mailed to small single unit companies with up to 20 employees (cutoff varied by industry). Payroll and sales data for 1987 were obtained from administrative records supplied by other agencies of the Federal Government. Those data were then used in conjunction with industry averages to estimate the items shown. Data are also included in respective employment-size classes shown.

**Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1987**

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry or product class code	Industry or primary product class	All establishments (number)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)				
3451	Screw machine products: All establishments in industry .....	1 635	42.7	945.3	34.1	72.9	666.1	1 770.5	1 048.9	2 806.2	99.7
34511	Establishments with this product class primary: Automotive screw machine products .....	242	10.2	235.7	7.9	17.1	161.9	460.7	368.1	826.6	23.8
34512	Other screw machine products .....	665	26.9	608.0	21.6	46.3	430.7	1 116.0	570.6	1 676.5	66.8

See footnotes at end of table.

Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1987—  
Con.

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry or product class code	Industry or primary product class	All establishments (number)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)				
3452	<b>Bolts, nuts, rivets, and washers:</b> All establishments in industry -----	937	52.0	1 325.0	38.7	80.5	886.9	2 995.8	2 115.7	5 084.0	150.4
	Establishments with this product class primary:										
34524	Externally threaded fasteners (except aircraft) -----	216	16.2	409.8	12.2	25.2	275.5	969.9	943.0	1 901.4	55.0
34525	Internally threaded fasteners (except aircraft) -----	61	5.1	137.9	3.9	8.4	98.1	309.1	213.1	527.1	13.2
34526	Nonthreaded fasteners (except aircraft) -----	72	6.3	155.3	4.2	8.3	87.3	338.4	230.1	568.3	12.8
34527	Aircraft aerospace fasteners -----	57	12.2	348.4	9.1	19.5	240.2	771.3	282.6	1 030.8	39.2
34528	Other formed parts -----	47	4.7	121.2	3.5	7.7	81.1	259.4	216.3	479.8	13.2
3462	<b>Iron and steel forgings:</b> All establishments in industry -----	406	26.6	746.5	19.1	37.8	484.3	1 394.0	1 553.5	3 003.6	108.2
	Establishments with this product class primary:										
34625	Hot impression die impact, press, and upset steel forgings -----	122	19.2	569.4	13.7	26.9	369.3	996.4	1 094.2	2 149.4	85.2
34626	Cold impression die impact, press, and upset steel forgings -----	19	1.5	33.7	1.1	2.4	23.4	83.4	107.9	191.2	5.7
34627	Seamless rolled ring forgings (ferrous) (see also code 3312a) -----	10	.8	22.1	.5	1.1	13.8	59.6	69.2	127.9	6.8
34628	Open die or smith forgings (hammer or press) (ferrous) (see also code 3312b) -----	34	2.1	56.1	1.5	3.2	35.2	118.5	154.8	271.2	4.5
3463	<b>Nonferrous forgings:</b> All establishments in industry -----	79	7.3	218.1	5.4	11.4	145.4	428.2	565.6	1 003.7	29.8
	Establishments with this product class primary:										
34635	Hot impression die impact, press, and upset nonferrous forgings -----	35	6.3	192.7	4.8	10.1	130.5	378.7	484.8	866.2	27.0
34639	Other nonferrous forgings -----	7	.5	14.5	.3	.6	7.8	26.0	51.9	85.1	.8
3465	<b>Automotive stampings:</b> All establishments in industry -----	713	119.8	3 976.9	99.9	213.3	3 157.5	6 659.3	8 582.2	15 251.6	1 285.0
3466	<b>Crowns and closures:</b> All establishments in industry -----	57	6.1	161.6	4.9	10.3	119.8	382.1	443.1	819.8	26.5
	Establishments with this product class primary:										
34661	Metal commercial closures and metal home canning closures -----	36	4.8	128.6	3.9	8.2	97.3	315.5	330.1	639.7	19.2
34662	Metal crowns -----	7	1.2	30.8	.9	1.9	20.9	63.2	106.5	170.3	7.0
3469	<b>Metal stampings, n.e.c.:</b> All establishments in industry -----	2 815	95.5	2 131.9	73.2	146.2	1 402.0	4 311.4	4 034.4	8 331.1	268.9
	Establishments with this product class primary:										
34692	Job stampings, except automotive -----	900	48.7	1 137.0	37.6	75.9	765.5	2 277.1	2 217.0	4 480.5	140.7
34694	Stamped and spun utensils, cooking and kitchen, aluminum -----	29	5.0	106.9	3.9	7.9	76.2	220.0	321.3	550.9	27.4
34695	Stamped and spun utensils, cooking and kitchen, except aluminum -----	15	2.7	71.0	1.8	3.4	36.7	174.8	136.7	312.0	8.1
34696	Metal spinning products -----	38	.9	18.1	.7	1.4	13.0	32.7	16.8	48.9	1.3
34699	Other stamped and pressed metal end products -----	271	16.5	371.5	12.4	24.2	228.2	756.8	656.3	1 403.1	51.5
3471	<b>Plating and polishing:</b> All establishments in industry -----	3 451	71.1	1 335.5	55.9	112.0	884.7	2 633.6	1 235.3	3 866.9	140.2
3479	<b>Metal coating and allied services:</b> All establishments in industry -----	1 814	41.5	831.5	32.3	65.0	558.8	1 995.4	1 936.9	3 922.6	105.3

Note: For qualifications of data, see footnotes on table 1a.

Table 5b. Industry-Product Analysis—Value of Shipments and Primary Product Shipments and Specialization and Coverage Ratios for the Industry: 1987 and Earlier Census Years

[An establishment is assigned to an industry based on shipment values of products representing largest amount considered primary to an industry. Frequently, establishment shipments comprise mixtures of products assigned to an industry (primary), those considered primary to other industries (secondary), and receipts for activities such as merchandising or contract work. Columns A-D show this product pattern for an industry, and column E shows primary product specialization ratio. The extent to which an industry's primary products are shipped by establishments classified in and out of an industry is shown in columns F-H and coverage ratio is shown in column I. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and product group code	Industry and census year	Value of shipments					Value of primary product shipments			
		Total (million dollars)	Primary products (million dollars)	Secondary products (million dollars)	Miscellaneous receipts (million dollars)	Primary product specialization ratio col. B ÷ col. B+C (percent)	Total made in all industries (million dollars)	Made in this industry (million dollars)	Made in other industries (million dollars)	Coverage ratio col. B ÷ col. F (percent)
		A	B	C	D	E	F	G	H	I
3451	Screw machine products -----	1987-- 2 806.2 1982-- 2 173.1 1977-- 1 771.7	2 578.5 2 029.0 1 629.0	137.1 79.0 67.1	90.7 65.1 75.6	95 96 96	2 763.3 2 159.7 1 771.4	2 578.5 2 029.0 1 629.0	184.8 130.8 142.4	93 94 92

See footnotes at end of table.



**Table 5b. Industry-Product Analysis—Value of Shipments and Primary Product Shipments and Specialization and Coverage Ratios for the Industry: 1987 and Earlier Census Years—Con.**

[An establishment is assigned to an industry based on shipment values of products representing largest amount considered primary to an industry. Frequently, establishment shipments comprise mixtures of products assigned to an industry (primary), those considered primary to other industries (secondary), and receipts for activities such as merchandising or contract work. Columns A-D show this product pattern for an industry, and column E shows primary product specialization ratio. The extent to which an industry's primary products are shipped by establishments classified in and out of an industry is shown in columns F-H and coverage ratio is shown in column I. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and product group code	Industry and census year	Value of shipments					Value of primary product shipments			
		Total (million dollars)	Primary products (million dollars)	Secondary products (million dollars)	Miscellaneous receipts (million dollars)	Primary product specialization ratio col. B ÷ col. E (percent)	Total made in all industries (million dollars)	Made in this industry (million dollars)	Made in other industries (million dollars)	Coverage ratio col. B ÷ col. F (percent)
		A	B	C	D	E	F	G	H	I
3452	Bolts, nuts, rivets, and washers ----- 1987__	5 084.0	4 592.7	253.3	238.0	95	4 793.1	4 592.7	200.4	96
	1982__	3 661.3	3 239.9	243.9	177.6	93	3 401.0	3 239.9	161.1	95
	1977__	3 319.5	2 936.0	195.9	187.5	94	3 130.3	2 936.0	194.3	94
3462	Iron and steel forgings ----- 1987__	3 003.6	2 670.4	267.9	65.3	91	2 903.2	2 670.4	232.8	92
	1982__	2 952.5	2 557.2	312.8	82.5	89	3 161.3	2 557.2	604.1	81
	1977__	2 795.7	2 495.8	218.9	81.0	92	2 966.7	2 495.8	470.9	84
3463	Nonferrous forgings ----- 1987__	1 003.7	808.5	136.5	58.7	86	1 061.4	808.5	252.9	76
	1982__	1 093.8	886.3	162.7	44.7	84	1 210.9	886.3	324.6	73
	1977__	456.7	361.5	54.1	41.1	87	540.4	361.5	178.9	67
3465	Automotive stampings ----- 1987__	15 251.6	13 963.1	765.4	523.2	95	14 961.0	13 963.1	998.0	93
	1982__	8 777.4	7 957.0	654.7	165.7	92	9 041.2	7 957.0	1 084.3	88
	1977__	9 739.2	8 779.9	753.7	205.7	92	9 599.8	8 779.9	819.9	91
3466	Crowns and closures ----- 1987__	819.8	772.7	35.2	11.9	96	811.4	772.7	38.7	95
	1982__	804.8	728.6	63.7	12.5	92	790.2	728.6	61.6	92
	1977__	536.9	497.3	26.6	12.9	95	581.0	497.3	83.7	86
3469	Metal stampings, n.e.c. ----- 1987__	8 331.1	7 214.9	825.4	290.8	90	7 970.0	7 214.9	755.1	91
	1982__	6 437.7	5 453.8	732.0	251.9	88	6 172.3	5 453.8	718.5	88
	1977__	4 735.7	3 990.1	552.7	192.9	88	4 554.5	3 990.1	564.4	88
3471	Plating and polishing ----- 1987__	3 866.9	3 609.5	106.1	151.2	(1)	3 828.4	3 609.5	218.8	(1)
	1982__	2 731.4	2 600.4	88.8	42.2	(1)	2 680.3	2 600.4	79.9	(1)
	1977__	1 848.5	1 728.4	50.5	69.7	(1)	1 775.1	1 728.4	46.7	(1)
3479	Metal coating and allied services ----- 1987__	3 922.6	3 495.6	271.8	155.1	(1)	3 800.2	3 495.6	304.5	(1)
	1982__	2 393.4	2 238.9	95.4	59.1	(1)	2 405.2	2 238.9	166.3	(1)
	1977__	1 607.7	1 368.1	114.0	125.6	(1)	1 520.5	1 368.1	152.4	(1)

<sup>1</sup>See table 1a, footnote 9.

**Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For comparability of product classes and product codes between 1982 and 1987, see appendixes. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987		1982	
		Number of companies with shipments of \$100,000 or more	Value of product shipments <sup>1</sup> (million dollars)	Number of companies with shipments of \$100,000 or more	Value of product shipments <sup>1</sup> (million dollars)
3451- --	<b>SCREW MACHINE PRODUCTS</b>				
	Total -----	(NA)	2 763.3	(NA)	2 159.7
34511 --	Automotive screw machine products (nonstandard items made from rod, bar, or tube stock on automatic or hand-operated screw machines):				
34511 00	Automotive screw machine products (nonstandard items made from rod, bar, or tube stock on automatic or hand-operated screw machines) -----	367	881.3	391	686.7
34512 --	Other screw machine products	(NA)	1 595.3	(NA)	1 245.3
	Nonstandard items made from rod, bar, or tube stock on automatic or hand-operated screw machines on basis of end product in which to be incorporated:				
34512 31	Aircraft -----	126	182.9	95	92.1
34512 39	Ordnance -----	96	85.5	81	54.0
34512 42	Household appliances, including radio and television -----	146	144.4	153	106.2
34512 52	Electric and electronic equipment, except household appliances -----	255	261.6	257	194.2
34512 62	Machinery -----	245	279.7	255	266.7
34512 99	All other end uses -----	377	588.8	478	507.4
34512 00	Other screw machine products, n.s.k. -----	(NA)	52.4	(NA)	24.6
34510 --	Screw machine products, n.s.k. -----	(NA)	286.7	(NA)	227.8
34510 00	Screw machine products, n.s.k., typically for establishments with 5 employees or more (see note) -----	(NA)	175.5	(NA)	174.2
34510 02	Screw machine products, n.s.k., typically for establishments with less than 5 employees (see note) -----	(NA)	111.1	(NA)	53.6

See footnotes at end of table.

**Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For comparability of product classes and product codes between 1982 and 1987, see appendixes. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987				1982			
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>			Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		
			Quantity <sup>2</sup>		Value (million dollars)		Quantity <sup>2</sup>		Value (million dollars)
			Million pieces	Million pounds			Million pieces	Million pounds	
3452- --	BOLTS, NUTS, RIVETS, AND WASHERS								
	Total -----	(NA)	(X)	(X)	4 793.1	(NA)	(X)	(X)	3 401.0
34524 --	Externally threaded fasteners (except aircraft) -----	(NA)	(X)	(X)	1 775.1	(NA)	(X)	(X)	1 451.0
34524 11	Bolts (except nonmetallic):								
34524 12	Mine roof bolts -----	13	(S)	(S)	180.2	15	(S)	(S)	165.2
34524 19	Hex bolts, including heavy, tap and joint, excluding high strength structural -----	56	(S)	(S)	168.7	62	(S)	**170.9	176.3
	Other metal bolts, including square, round, plow, high strength structural, and bent bolts -----	97	(X)	(X)	276.2	110	(S)	(S)	367.3
34524 39	Screws (except nonmetallic):								
34524 45	Cap, set, machine, lag, flange, and self-locking -----	75	6 171.3	(S)	379.1	80	5 333.2	(S)	246.6
34524 89	Tapping, including fillister, flat, hex, oval, pan and truss, and wood, including flat, oval, and round -----	59	(S)	(S)	309.3	67	(S)	(S)	178.9
	Other externally threaded metal fasteners not mentioned above, including studs and all nonmetallic externally threaded fasteners -----	85	(X)	(X)	434.7	114	3 574.5	(S)	315.6
34524 00	Externally threaded fasteners (except aircraft), n.s.k. -----	(NA)	(X)	(X)	27.0	(NA)	(X)	(X)	1.1
34525 --	Internally threaded fasteners (except aircraft) -----	(NA)	(X)	(X)	534.0	(NA)	(X)	(X)	408.6
34525 04	Nuts (except nonmetallic):								
	Hex, including flanges, double chamfered, washer face, flat, jam, slotted, thick, castle, heavy, machine, and locking -----	59	(S)	**223.7	268.5	78	2 763.1	(S)	234.2
34525 29	Square, including flat, washer, crowned, heavy, track, sleeve, and machine, sheet metal; weld; wing; and cage, anchor, and nut retainers -----	24	(S)	(S)	98.9	23	(S)	(S)	41.5
34525 89	Other internally threaded metal fasteners not mentioned above, including flanged nuts (all types, except hex) and locknuts (all types, except hex) and all nonmetallic internally threaded fasteners -----	59	(X)	(X)	156.8	53	(X)	(X)	132.4
34525 00	Internally threaded fasteners (except aircraft), n.s.k. -----	(NA)	(X)	(X)	9.9	(NA)	(X)	(X)	.5
34526 --	Nonthreaded fasteners (except aircraft) -----	(NA)	(X)	(X)	574.5	(NA)	(X)	(X)	526.2
34526 09	Rivets (except nonmetallic):								
34526 15	Solid -----	37	(S)	**69.9	77.4	36	1 247.8	(S)	80.0
34526 35	Tubular, split (including rivet caps) and blind -----	22	(S)	(S)	126.4	33	(S)	(S)	114.0
34526 79	Washers (except nonmetallic) -----	46	(S)	**124.9	138.6	51	3 402.7	(S)	116.0
	Other nonthreaded metal fasteners not mentioned above, including pins (all types), and all nonmetallic nonthreaded products -----	78	(X)	(X)	205.7	70	(X)	(X)	215.4
34526 00	Nonthreaded fasteners (except aircraft), n.s.k. -----	(NA)	(X)	(X)	26.4	(NA)	(X)	(X)	.8
34527 --	Aircraft aerospace fasteners (meet specifications for flying vehicles) -----	(NA)	(X)	(X)	873.1	(NA)	(X)	(X)	516.7
	Externally threaded:								
	Bolts:								
34527 01	Less than 161 KSI tensile -----	18	(S)	(S)	163.1	16	29.5	(S)	34.6
34527 06	161 KSI tensile or more -----	15	(S)	(S)	169.9	15	24.6	(S)	58.7
34527 15	Screws, all types; and studs, all types -----	24	(S)	(S)	65.3	20	(S)	(S)	131.6
	Internally threaded:								
34527 45	Locknuts, including flanged locknuts -----	15	(S)	(S)	167.6	12	(S)	(S)	79.2
34527 59	Other, including flanged nuts (all types, except flanged locknuts), hex square nuts (all types), and sheet metal fasteners -----	25	(S)	(S)	138.1	13	33.9	(S)	137.6
	Nonthreaded:								
34527 61	Washers, all types -----	13	(S)	(S)	10.3	5	(S)	(S)	6.0
34527 62	Rivets, all types -----	13	(S)	(S)	117.1	12	347.9	(S)	46.4
34527 63	Pins, all types -----	13	(S)	(S)	37.7	11	50.4	(S)	20.5
34527 00	Aircraft aerospace fasteners (meet specifications for flying vehicles), n.s.k. -----	(NA)	(X)	(X)	4.0	(NA)	(X)	(X)	2.1
34528 --	Other formed parts (made on fastener machines) -----	(NA)	(X)	(X)	481.7	(NA)	(X)	(X)	329.9
34528 11	Automotive -----	43	(S)	**206.8	265.5	37	610.7	(S)	124.7
34528 21	Household appliances, including radio and television -----	13	(S)	(S)	30.6	16	(S)	(S)	24.8
34528 31	Aircraft -----	16	(S)	(S)	41.7	19	(S)	(S)	40.4
34528 98	All other, including ordnance -----	64	(S)	(S)	135.4	63	(S)	(S)	139.3
34528 00	Other formed parts (made on fastener machines), n.s.k. -----	(NA)	(X)	(X)	8.4	(NA)	(X)	(X)	.8
34520 --	Bolts, nuts, rivets, and washers, n.s.k. -----	(NA)	(X)	(X)	554.7	(NA)	(X)	(X)	168.5
34520 00	Bolts, nuts, rivets, and washers, n.s.k., typically for establishments with 20 employees or more (see note) -----	(NA)	(X)	(X)	349.9	(NA)	(X)	(X)	105.4
34520 02	Bolts, nuts, rivets, and washers, n.s.k., typically for establishments with less than 20 employees (see note) -----	(NA)	(X)	(X)	204.8	(NA)	(X)	(X)	63.1

See footnotes at end of table.



**Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For comparability of product classes and product codes between 1982 and 1987, see appendixes. For meaning of abbreviations and symbols, see introductory text.]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
<b>3462- --</b>	<b>IRON AND STEEL FORGINGS</b>						
	Total .....	(NA)	(X)	2 903.2	(NA)	(NA)	(NA)
34625 --	Hot impression die impact, press, and upset steel forgings .....	(NA)	(X)	2 004.7	(NA)	(X)	(NA)
34625 11	Carbon steel .....	100	*585.7	750.1	(NA)	1 326.8	2 265.5
34625 13	Alloy steel, excluding stainless and hi-temp .....	84	536.2	766.8			
34625 15	Stainless .....	35	*9.1	91.2			
34625 17	Hi-temp (iron, nickel, or cobalt base alloy) .....	20	7.4	287.6			
34625 00	Hot impression die impact, press, and upset steel forgings, n.s.k. ....	(NA)	(X)	108.9	(NA)	(X)	(NA)
34626 --	Cold impression die impact, press, and upset steel forgings .....	(NA)	(X)	189.8	(NA)	(X)	(NA)
34626 11	Carbon steel .....	16	*38.2	101.1	(NA)	112.7	219.8
34626 13	Alloy steel, excluding stainless and hi-temp .....	10	50.8	73.0			
34626 15	Stainless .....	3	( <sup>3</sup> )	( <sup>3</sup> )			
34626 17	Hi-temp (iron, nickel, or cobalt base alloy) .....	2	(S)	39.4			
34626 00	Cold impression die impact, press, and upset steel forgings, n.s.k. ....	(NA)	(X)	6.3	(NA)	(X)	(NA)
34627 --	Seamless rolled ring forgings (ferrous) (see also code 3312A) .....	(NA)	(X)	181.2	(NA)	(X)	(NA)
34627 11	Carbon steel .....	18	20.5	30.9	(NA)	(X)	(NA)
34627 13	Alloy steel, excluding stainless and hi-temp .....	17	*7.5	59.3			
34627 15	Stainless .....	15	*2.5	16.1			
34627 17	Hi-temp (iron, nickel, or cobalt base alloy) .....	11	(S)	72.6			
34627 00	Seamless rolled ring forgings (ferrous), n.s.k. ....	(NA)	(X)	2.4	(NA)	(X)	(NA)
34628 --	Open die or smith forgings (hammer or press) (ferrous) (see also code 3312B) .....	(NA)	(X)	271.8	(NA)	(X)	(NA)
34628 11	Carbon steel .....	33	*94.5	102.3	(NA)	(X)	(NA)
34628 13	Alloy steel, excluding stainless and hi-temp .....	26	37.2	107.6			
34628 15	Stainless .....	22	*5.0	25.0			
34628 17	Hi-temp (iron, nickel, or cobalt base alloy) .....	11	*.7	15.2			
34628 00	Open die or smith forgings (hammer or press) (ferrous), n.s.k. ....	(NA)	(X)	21.7	(NA)	(X)	(NA)
34620 --	Iron and steel forgings, n.s.k. ....	(NA)	(X)	255.7	(NA)	(X)	(NA)
34620 00	Iron and steel forgings, n.s.k., typically for establishments with 20 employees or more (see note) .....	(NA)	(X)	144.4	(NA)	(X)	(NA)
34620 02	Iron and steel forgings, n.s.k., typically for establishments with less than 20 employees (see note) .....	(NA)	(X)	111.3	(NA)	(X)	(NA)
<b>3463- --</b>	<b>NONFERROUS FORGINGS</b>						
	Total .....	(NA)	(X)	1 061.4	(NA)	(X)	1 210.9
34635 --	Hot impression die impact, press, and upset nonferrous forgings .....	(NA)	(X)	884.7	(NA)	(X)	1 011.2
34635 21	Aluminum and aluminum alloy .....	38	*72.0	508.5	34	48.6	382.4
34635 23	Titanium and titanium alloy .....	25	6.8	276.2	23	6.4	492.2
34635 25	Copper and copper-base alloy .....	12	16.2	73.2	12	15.2	71.9
34635 29	Other hot impression nonferrous forgings .....	8	2.8	18.2	17	6.0	64.7
34635 00	Hot impression die impact, press, and upset nonferrous forgings, n.s.k. ....	(NA)	(X)	8.6	(NA)	(X)	-
34639 --	Other nonferrous forgings .....	(NA)	(X)	124.4	(NA)	(X)	193.7
34639 15	Cold impression die impact, press, and upset nonferrous forgings .....	8	10.6	35.9	7	*3.6	18.2
34639 25	Seamless rolled ring forgings (nonferrous) .....	10	3.9	56.8	9	7.5	96.3
34639 35	Open die or smith forgings, hammer or press (nonferrous) .....	13	*4.7	30.9	20	16.3	79.2
34639 00	Other nonferrous forgings, n.s.k. ....	(NA)	(X)	.8	(NA)	(X)	-
34630 --	Nonferrous forgings, n.s.k. ....	(NA)	(X)	52.3	(NA)	(X)	6.0
34630 00	Nonferrous forgings, n.s.k., typically for establishments with 10 employees or more (see note) .....	(NA)	(X)	35.4	(NA)	(X)	1.4
34630 02	Nonferrous forgings, n.s.k., typically for establishments with less than 10 employees (see note) .....	(NA)	(X)	16.9	(NA)	(X)	4.6
1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Value of product shipments <sup>1</sup> (million dollars)		Number of companies with shipments of \$100,000 or more	Value of product shipments <sup>1</sup> (million dollars)	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
<b>3465- --</b>	<b>AUTOMOTIVE STAMPINGS</b>						
	Total .....	(NA)		14 961.0	(NA)		9 041.2
34650 --	Job stampings, automotive:						
34650 00	Automotive job stampings (truck, bus, and passenger car) .....	623		14 789.3	610		8 957.4
34650 02	Automotive stampings, n.s.k., typically for establishments with less than 20 employees (see note) .....	(NA)		171.7	(NA)		83.9

See footnotes at end of table.

**Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For comparability of product classes and product codes between 1982 and 1987, see appendixes. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
<b>3466--</b>	<b>CROWNS AND CLOSURES</b>						
	<b>Total .....</b>	<b>(NA)</b>	<b>(X)</b>	<b>811.4</b>	<b>(NA)</b>	<b>(X)</b>	<b>790.2</b>
34661 --	Metal commercial closures and metal home canning closures, except crowns:						
34661 00	Metal commercial closures and metal home canning closures, including milk bottle closures (for additional detail, see Current Industrial Report MQ-34H, Closures for Containers).....	43	(X)	686.2	27	(X)	627.1
34662 --	Metal crowns:						
34662 00	Metal crowns for glass and metal containers (for additional detail, see Current Industrial Report MQ-34H, Closures for Containers).....	7	(X)	115.4	8	(X)	145.0
34660 --	Crowns and closures, n.s.k. ....	(NA)	(X)	9.8	(NA)	(X)	18.1
34660 00	Crowns and closures, n.s.k., typically for establishments with 5 employees or more (see note) .....	(NA)	(X)	.1	(NA)	(X)	4.4
34660 02	Crowns and closures, n.s.k., typically for establishments with less than 5 employees (see note) .....	(NA)	(X)	9.7	(NA)	(X)	13.7
<b>3469--</b>	<b>METAL STAMPINGS, N.E.C.</b>						
	<b>Total .....</b>	<b>(NA)</b>	<b>(X)</b>	<b>7 970.0</b>	<b>(NA)</b>	<b>(X)</b>	<b>6 172.3</b>
34692 --	Job stampings, except automotive .....	(NA)	(X)	4 252.7	(NA)	(X)	2 908.9
34692 01	Recreational vehicle stampings (motor homes, travel trailers, etc.).....	48	(X)	40.7	34	(X)	23.3
34692 05	Motor and generator stampings .....	81	(X)	90.3	71	(X)	80.9
34692 11	Aviation stampings .....	83	(X)	216.3	80	(X)	198.4
34692 15	Agricultural equipment stampings, including tractor .....	92	(X)	96.3	95	(X)	94.6
34692 20	Computer stampings .....	158	(X)	292.7	(NA)	(X)	(NA)
34692 25	Electrical appliance stampings, except refrigeration and laundry equipment .....	158	(X)	286.0	165	(X)	157.9
34692 31	Furniture stampings .....	88	(X)	186.9	59	(X)	54.3
34692 41	Office machine stampings, excluding computer .....	82	(X)	110.1	129	(X)	162.6
34692 52	Radio and phonograph stampings .....	34	(X)	28.5	38	(X)	27.9
34692 53	Television stampings .....	33	(X)	63.3	46	(X)	56.4
34692 61	Refrigerator stampings (residential, commercial, and industrial) .....	57	(X)	195.1	36	(X)	88.6
34692 71	Stove, heater, and air-conditioner stampings (residential, commercial, and industrial).....	80	(X)	74.5	74	(X)	74.1
34692 84	Laundry equipment stampings (residential, commercial, and industrial) .....	42	(X)	76.6	31	(X)	62.7
34692 88	Other industrial equipment stampings .....	263	(X)	346.1	233	(X)	323.3
34692 98	Other job stampings .....	544	(X)	1 755.7	552	(X)	1 407.6
34692 00	Job stampings, except automotive, n.s.k. ....	(NA)	(X)	393.6	(NA)	(X)	96.4
34694 --	Stamped and spun utensils, cooking and kitchen, aluminum						
34694 11	Top of range household utensils (items generally used directly on top of source of heat), including pressure cookers .....	13	(S)	267.3	23	*82.5	327.7
34694 14	Bakeware, pantryware, and miscellaneous household utensils .....	18	(S)	133.9	28	(S)	143.8
34694 17	Camping and outdoor cooking equipment .....	3	(S)	3.1	10	(S)	8.7
34694 29	Other, including commercial and hospital .....	13	(S)	53.9	17	(S)	27.1
34694 00	Stamped and spun utensils, cooking and kitchen, aluminum, n.s.k. ....	(NA)	(X)	43.0	(NA)	(X)	.8
34695 --	Stamped and spun utensils, cooking and kitchen, except aluminum .....	(NA)	(X)	288.6	(NA)	(X)	367.7
34695 07	Stainless steel:						
	Top of range household utensils (items generally used directly on top of source of heat) .....	17	(S)	153.6	15	(S)	153.5
34695 09	Bakeware, pantryware, and miscellaneous household utensils .....	8	(S)	15.9	13	(S)	17.2
34695 15	Other, including commercial, hospital, and outdoor cooking equipment .....	18	(S)	66.4	25	(S)	47.0
34695 21	Tinware:						
	Household .....	9	(S)	18.0	6		
34695 24	Other, including commercial, hospital, and outdoor cooking equipment .....	4	(D)	(D)	4	(S)	69.9
34695 27	Vitreous enameled cooking and kitchen utensils.....	1	(X)	(D)	2		
34695 98	Other stamped and spun cooking and kitchen utensils, including copper .....	9	(X)	(D)	11	(X)	76.2
34695 00	Stamped and spun utensils, cooking and kitchen, except aluminum, n.s.k. ....	(NA)	(X)	7.8	(NA)	(X)	4.0
34696 --	Metal spinning products (excluding cooking and kitchen utensils):						
34696 00	Metal spinning products, excluding cooking and kitchen utensils .....	45	(X)	46.5	(NA)	(X)	(NA)

See footnotes at end of table.



Table 6a-1. **Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For comparability of product classes and product codes between 1982 and 1987, see appendixes. For meaning of abbreviations and symbols, see introductory text.]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
<b>3469- --</b>	<b>METAL STAMPINGS, N.E.C.—Con.</b>						
34699 --	Other stamped and pressed metal end products, including vitreous enameled products .....	(NA)	(X)	1 390.8	(NA)	(X)	1 584.8
34699 41	Vitreous (porcelain) enameled products, excluding cooking and kitchen utensils: .....						
34699 48	Architectural parts (exterior and interior), including store front and curtain wall components .....	8	(X)	9.1	18	(X)	23.2
34699 59	Other products, including refrigerator parts, commercial and hospital utensils, and laundry equipment parts sold separately .....	11	(X)	29.0	16	(X)	26.5
34699 61	Perforated metal end products .....	29	(X)	84.4	31	(X)	93.5
34699 69	Pails, ash cans, garbage cans, tubs, etc. (excluding shipping containers): .....						
34699 71	Galvanized steel .....	9	(X)	21.8	15	(X)	50.3
34699 85	Other metal, including other grades of steel .....	18	(X)	33.0	20	(X)	41.2
34699 89	Electronic enclosures (stamped and/or pressed), excluding computer stampings .....	88	(X)	292.1	190	(X)	520.0
34699 98	Mailboxes (commercial and multiple unit residential) .....	10	(X)	42.8	17	(X)	43.6
34699 00	Toolboxes .....	22	(X)	235.8	29	(X)	186.1
34699 02	Other stamped and pressed metal end products, excluding spinning products .....	239	(X)	630.0	281	(X)	576.5
34690 --	Other stamped and pressed metal end products, including vitreous enameled products, n.s.k. ....	(NA)	(X)	12.8	(NA)	(X)	23.9
34690 00	Metal stampings, n.e.c., n.s.k. ....	(NA)	(X)	1 490.2	(NA)	(X)	802.6
34690 02	Metal stampings, n.e.c., n.s.k., typically for establishments with 10 employees or more (see note) .....	(NA)	(X)	1 220.8	(NA)	(X)	588.3
34690 02	Metal stampings, n.e.c., n.s.k., typically for establishments with less than 10 employees (see note) .....	(NA)	(X)	269.4	(NA)	(X)	214.3
1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Value of product shipments <sup>1</sup> (million dollars)		Number of companies with shipments of \$100,000 or more	Value of product shipments <sup>1</sup> (million dollars)	
<b>3471- --</b>	<b>PLATING AND POLISHING</b>						
	<b>Total .....</b>	<b>(NA)</b>	<b>3 828.4</b>	<b>(NA)</b>	<b>2 680.3</b>		
34710 --	Electroplating, plating, and polishing: .....						
34710 00	Electroplating, plating, polishing, and anodizing .....	2 139	3 671.0	(NA)	2 680.3		
34710 02	Electroplating, plating, and polishing, n.s.k., typically for establishments with less than 5 employees (see note) .....	(NA)	157.3	-	-		
<b>3479- --</b>	<b>METAL COATING AND ALLIED SERVICES</b>						
	<b>Total .....</b>	<b>(NA)</b>	<b>3 800.2</b>	<b>(NA)</b>	<b>2 405.2</b>		
34790 --	Etching, engraving, coating, and allied services: .....						
34790 10	Electronic engraving, excluding metal name plates .....	22	27.3	( <sup>4</sup> )	( <sup>4</sup> )		
34790 11	Photo chemical etching, including machining (excluding metal nameplates) .....	45	78.2	( <sup>4</sup> )	( <sup>4</sup> )		
34790 13	Etching and engraving metal nameplates .....	39	50.1	86	94.2		
34790 21	Other engraving and etching .....	54	65.4	488	469.4		
34790 31	Galvanizing and other hot dip coating .....	93	864.5	136	524.8		
34790 61	Organic coatings, enamels, lacquers, including alkydes, vinyls, acrylics, plastisols, etc.: .....						
34790 63	Coil coating .....	33	574.4	43	460.5		
34790 73	Liquid spray coating, including electrostatic .....	332	587.9	5479	565.8		
34790 75	Powder coating, including electrostatic and fluidized bed .....	164	316.8				
34790 81	All other, including curtain coating, wash coating, etc. ....	127	382.6	187	466.9		
34790 00	Metal coating and allied services, n.s.k., typically for establishments with 5 employees or more (see note) .....	(NA)	700.4	(NA)	74.5		
34790 02	Metal coating and allied services, n.s.k., typically for establishments with less than 5 employees (see note) .....	(NA)	152.5	(NA)	59.0		

Note: In 1987 Census of Manufactures, data for establishments of small single unit companies with up to 20 employees were estimated from administrative-record data rather than data actually collected from respondents. Employment cutoffs used for administrative records for each industry and shipments figures are included in code ending with "002". In both 1987 and 1982 Censuses of Manufactures, products not completely identified on standard forms were coded in appropriate product class (five-digit) followed by "00" or to appropriate product group code (four-digit) followed by "000".

<sup>1</sup>Data reported by all producers, not just those with shipments of \$100,000 or more.

<sup>2</sup>For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: \* 10 to 19 percent estimated; \*\* 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

<sup>3</sup>For 1987, product code 34626 15 was combined with product code 34626 17 to avoid disclosing data for individual companies.

<sup>4</sup>For 1982, product codes 34790 10, 34790 11, and 34790 21 were reported as product code 34790 19.

<sup>5</sup>For 1982, product codes 34790 73 and 34790 75 were reported as product code 34790 71.

**Table 6a-2. Related Products From Current Industrial Reports Series—Value of Shipments by All Producers: 1987 and 1982**

[Additional detail is provided in the Current Industrial Report series. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987 product shipments		1982 product shipments	
		Quantity	Value (million dollars)	Quantity	Value (million dollars)
	<b>MQ34H, CLOSURES FOR CONTAINERS</b>				
34661--	Metal commercial closures and metal home-canning closures, except crowns.....	(X)	(D)	(X)	(D)
34661 01	Metal and metal-composite closures..... millions.....	15	746.6	(NA)	(NA)
34661 82	Metal and metal-composite home-canning closures..... mil gross.....	(D)	(D)	(D)	(D)
34661 83	All other closures, including roll-ons..... do.....	113.3	148.4	(NA)	126.2
34661 84	Soft drinks..... do.....	85.9	115.8	(NA)	(NA)
34661 85	Beer and all other..... do.....	27.4	32.6	(NA)	(NA)
34662 --	Metal crowns..... do.....	243.1	102.9	(X)	144.3
34662 15	Soft drink..... do.....	89.4	32.5	86.1	52.1
34662 25	Beer and all other..... do.....	153.7	70.4	148.6	92.2

**Table 6a-3. Selected Products Primary to More Than One Industry—Quantity and Value of Shipments by Industry: 1987 and 1982**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) also are included. For further explanation, see Value Shipments in appendixes. For comparability of product classes and product codes between 1982 and 1987, see appendixes. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
3312A	Seamless rolled ring forgings, ferrous.....	(NA)	(X)	(D)	22	(X)	254.3
34627	Made in steel mills.....	(NA)	(X)	(D)	2	(X)	(D)
	Not made in steel mills.....	(NA)	(X)	181.2	20	(X)	(D)
	Seamless rolled ring iron and steel forgings:						
	Carbon steel..... 1,000 s tons.....	(NA)	(D)	(D)	(NA)	(NA)	(NA)
3312A 11	Made in steel mills.....	2	(D)	(D)	(NA)	(NA)	(NA)
34627 11	Not made in steel mills.....	18	20.5	30.9	(NA)	(NA)	(NA)
	Alloy steel, excluding stainless and hi-temp..... do.....	(NA)	(D)	(D)	(NA)	(NA)	(NA)
3312A 23	Made in steel mills..... do.....	2	(D)	(D)	(NA)	(NA)	(NA)
34627 13	Not made in steel mills..... do.....	17	**7.5	59.3	(NA)	(NA)	(NA)
	Stainless..... do.....	(NA)	(D)	(D)	(NA)	(NA)	(NA)
3312A 25	Made in steel mills..... do.....	1	(D)	(D)	(NA)	(NA)	(NA)
34627 15	Not made in steel mills..... do.....	15	**2.5	16.1	(NA)	(NA)	(NA)
	Hi-temp (iron, nickel, or cobalt-base alloy)..... do.....	(NA)	(D)	(D)	(NA)	(NA)	(NA)
3312A 27	Made in steel mills..... do.....	1	(D)	(D)	(NA)	(NA)	(NA)
34627 17	Not made in steel mills..... do.....	11	(S)	72.6	(NA)	(NA)	(NA)
	Seamless rolled ring, ferrous, n.s.k..... do.....	(NA)	(X)	33.5	(NA)	(X)	(NA)
3312A 00	Made in steel mills..... do.....	(NA)	(X)	31.3	(NA)	(X)	(NA)
34627 00	Not made in steel mills..... do.....	(NA)	(X)	2.4	(NA)	(X)	(NA)
	Open die or smith forgings, (hammer or press), ferrous..... do.....	(NA)	(X)	(D)	79	(X)	747.5
3312B	Made in steel mills..... do.....	(NA)	(X)	(D)	10	(X)	(D)
3462B	Not made in steel mills..... do.....	(NA)	(X)	271.8	69	(X)	(D)
	Carbon steel..... do.....	(NA)	106.2	116.7	(NA)	(NA)	(NA)
3312B 61	Made in steel mills..... do.....	6	11.7	14.4	(NA)	(NA)	(NA)
34628 11	Not made in steel mills..... do.....	33	*94.5	102.3	(NA)	(NA)	(NA)
	Alloy steel, excluding stainless and hi-temp..... do.....	(NA)	84.3	208.7	(NA)	(NA)	(NA)
3312B 63	Made in steel mills..... do.....	5	47.1	101.1	(NA)	(NA)	(NA)
34628 13	Not made in steel mills..... do.....	26	37.2	107.6	(NA)	(NA)	(NA)
	Stainless..... do.....	(NA)	(D)	(D)	(NA)	(NA)	(NA)
3312B 65	Made in steel mills..... do.....	4	(D)	(D)	(NA)	(NA)	(NA)
34628 15	Not made in steel mills..... do.....	22	*5.0	25.0	(NA)	(NA)	(NA)
	Hi-temp (iron, nickel, or cobalt-base alloy)..... do.....	(NA)	(D)	(D)	(NA)	(NA)	(NA)
3312B 67	Made in steel mills..... do.....	-	(D)	(D)	(NA)	(NA)	(NA)
34628 17	Not made in steel mills..... do.....	11	**7	15.2	(NA)	(NA)	(NA)
	Open die or smith forgings, (hammer or press), ferrous, n.s.k..... do.....	(NA)	(X)	21.7	(NA)	(X)	(NA)
3312B 00	Made in steel mills..... do.....	(NA)	(X)	-	(NA)	(X)	(NA)
34628 00	Not made in steel mills..... do.....	(NA)	(X)	21.7	(NA)	(X)	(NA)

<sup>1</sup>Data reported by all producers, not just those with shipments of \$100,000 or more.

<sup>2</sup>For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: \* 10 to 19 percent estimated; \*\* 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).



**Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1987 and 1982**

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1987. For meaning of abbreviations and symbols, see introductory text. For comparability of product classes and product codes between 1982 and 1987 and explanation of terms, see appendixes]

Product class and geographic area	1987 value of product shipments	1982 value of product shipments	Product class and geographic area	1987 value of product shipments	1982 value of product shipments
<b>34511, AUTOMOTIVE SCREW MACHINE PRODUCTS</b>			<b>34526, NONTHEADED FASTENERS (EXCEPT AIRCRAFT)</b>		
United States .....	881.3	686.7	United States .....	574.5	526.2
California .....	29.9	26.2	California .....	46.5	33.6
Connecticut .....	16.3	26.5	Connecticut .....	69.6	60.9
Florida .....	8.4	(NA)	Illinois .....	80.2	62.8
Illinois .....	138.4	102.4	Indiana .....	11.1	3.7
Indiana .....	23.4	19.2	Massachusetts .....	14.0	26.9
Michigan .....	393.9	283.2	Michigan .....	32.2	23.0
Minnesota .....	19.3	(NA)	Minnesota .....	10.4	11.1
Missouri .....	24.1	18.1	New Jersey .....	48.2	44.7
New Jersey .....	5.7	10.4	New York .....	54.8	63.5
New York .....	56.8	26.2	Ohio .....	40.8	40.1
Ohio .....	113.0	67.5	Pennsylvania .....	37.4	41.9
Pennsylvania .....	7.2	21.5	Wisconsin .....	56.5	41.3
Texas .....	2.8	3.8			
Wisconsin .....	16.3	10.6	<b>34527, AIRCRAFT AEROSPACE FASTENERS</b>		
<b>34512, OTHER SCREW MACHINE PRODUCTS</b>			United States .....	873.1	516.7
United States .....	1 595.3	1 245.3	California .....	660.2	402.7
Arizona .....	18.3	4.7	Connecticut .....	15.5	13.0
California .....	163.6	91.0	Illinois .....	3.5	(NA)
Connecticut .....	134.1	99.8	Indiana .....	4.9	(NA)
Florida .....	9.3	13.5	Ohio .....	6.4	(NA)
Illinois .....	160.3	190.7	Texas .....	4.3	3.3
Indiana .....	75.4	51.6	<b>34528, OTHER FORMED PARTS</b>		
Iowa .....	10.5	8.8	United States .....	481.7	329.9
Kentucky .....	5.6	5.6	California .....	51.3	36.3
Massachusetts .....	74.1	59.7	Illinois .....	97.0	30.7
Michigan .....	151.9	119.4	Indiana .....	11.3	(NA)
Minnesota .....	49.2	38.9	Michigan .....	150.5	78.9
Missouri .....	37.9	30.7	New Jersey .....	11.0	7.5
Nebraska .....	9.5	6.1	Ohio .....	37.0	41.5
New Hampshire .....	6.4	6.6	Pennsylvania .....	33.9	29.4
New Jersey .....	66.8	73.0			
New York .....	136.6	103.6	<b>34625, HOT IMPRESSION DIE IMPACT, PRESS, AND UPSET STEEL FORGINGS</b>		
North Carolina .....	8.3	3.5	United States .....	2 004.7	2 265.5
Ohio .....	195.8	146.6	California .....	79.7	83.4
Oregon .....	11.8	12.4	Connecticut .....	28.5	22.0
Pennsylvania .....	70.7	51.0	Illinois .....	191.9	267.5
Rhode Island .....	13.1	15.1	Indiana .....	76.9	77.6
South Carolina .....	7.0	3.5	Michigan .....	221.7	190.0
Tennessee .....	42.9	20.9	Ohio .....	405.3	410.2
Texas .....	17.7	14.1	Pennsylvania .....	203.8	195.0
Washington .....	13.2	2.1	Tennessee .....	38.0	30.7
Wisconsin .....	59.3	39.2	Texas .....	193.1	275.1
			Wisconsin .....	191.9	175.6
<b>34524, EXTERNALLY THREADED FASTENERS (EXCEPT AIRCRAFT)</b>			<b>34626, COLD IMPRESSION DIE IMPACT, PRESS, AND UPSET STEEL FORGINGS</b>		
United States .....	1 775.1	1 451.0	United States .....	189.8	219.8
Alabama .....	43.8	33.0	Michigan .....	38.4	94.9
California .....	38.6	41.6	Ohio .....	82.2	83.3
Connecticut .....	47.1	46.4			
Illinois .....	539.7	412.3	<b>34627, SEAMLESS ROLLED RING FORGINGS (FERROUS) (SEE ALSO CODE 3312A)</b>		
Indiana .....	52.3	22.7	United States .....	181.2	(NA)
Iowa .....	39.7	(NA)	California .....	40.9	(NA)
Kentucky .....	54.6	75.3			
Maryland .....	3.9	(NA)	<b>34628, OPEN DIE OR SMITH FORGINGS (HAMMER OR PRESS) (FERROUS) (SEE ALSO CODE 3312B)</b>		
Massachusetts .....	37.9	51.1	United States .....	271.8	(NA)
Michigan .....	300.9	141.7	California .....	13.4	(NA)
Mississippi .....	5.8	(NA)	New York .....	19.6	(NA)
New Jersey .....	12.8	21.2	Pennsylvania .....	86.8	(NA)
New York .....	42.8	22.2	Texas .....	36.2	(NA)
North Carolina .....	49.0	(NA)	Wisconsin .....	16.4	(NA)
Ohio .....	217.4	181.3			
Pennsylvania .....	106.7	155.8	<b>34635, HOT IMPRESSION DIE IMPACT, PRESS, AND UPSET NONFERROUS FORGINGS</b>		
Rhode Island .....	10.2	28.4	United States .....	884.7	1 011.2
Texas .....	39.6	52.7	California .....	247.8	268.5
Virginia .....	71.8	34.5	Connecticut .....	23.5	35.7
<b>34525, INTERNALLY THREADED FASTENERS (EXCEPT AIRCRAFT)</b>			Illinois .....	14.5	11.4
United States .....	534.0	408.6	Michigan .....	38.8	(NA)
California .....	83.1	33.3	Texas .....	28.7	(NA)
Connecticut .....	25.3	17.1			
Illinois .....	26.8	44.9			
Indiana .....	37.2	26.7			
Massachusetts .....	14.4	10.7			
Michigan .....	96.6	71.6			
Missouri .....	3.3	(NA)			
New York .....	6.1	5.8			
Ohio .....	57.4	51.7			
Pennsylvania .....	78.5	57.5			
Rhode Island .....	3.8	4.5			
Wisconsin .....	13.9	5.8			

Table 6b. **Product Classes—Value of Shipments by All Producers for Specified States: 1987 and 1982—Con.**

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1987. For meaning of abbreviations and symbols, see introductory text. For comparability of product classes and product codes between 1982 and 1987 and explanation of terms, see appendixes]

Product class and geographic area	1987 value of product shipments	1982 value of product shipments	Product class and geographic area	1987 value of product shipments	1982 value of product shipments
<b>34639, OTHER NONFERROUS FORGINGS</b>			<b>34694, STAMPED AND SPUN UTENSILS, COOKING AND KITCHEN, ALUMINUM</b>		
United States -----	124.4	193.7	United States -----	501.2	508.2
California -----	69.3	93.6	California -----	5.1	(NA)
			Ohio -----	117.9	115.6
<b>34661, METAL COMMERCIAL CLOSURES AND METAL HOME CANNING CLOSURES</b>			<b>34695, STAMPED AND SPUN UTENSILS, COOKING AND KITCHEN, EXCEPT ALUMINUM</b>		
United States -----	686.2	627.1	United States -----	288.6	367.7
California -----	63.5	60.8	California -----	6.8	(NA)
Connecticut -----	65.4	(NA)	Illinois -----	123.8	107.9
Indiana -----	110.3	104.7	Ohio -----	8.9	(NA)
New York -----	38.2	23.6	Wisconsin -----	102.8	100.9
Pennsylvania -----	159.6	160.7			
<b>34692, JOB STAMPINGS, EXCEPT AUTOMOTIVE</b>			<b>34696, METAL SPINNING PRODUCTS</b>		
United States -----	4 252.7	2 908.9	United States -----	46.5	(NA)
Alabama -----	49.8	36.3	California -----	4.9	(NA)
Arizona -----	38.6	10.8	Illinois -----	9.1	(NA)
Arkansas -----	3.5	(NA)	Ohio -----	2.8	(NA)
California -----	240.6	179.5	Pennsylvania -----	3.5	(NA)
Colorado -----	11.3	4.7	Wisconsin -----	4.7	(NA)
Connecticut -----	241.9	173.3	<b>34699, OTHER STAMPED AND PRESSED METAL END PRODUCTS</b>		
Florida -----	25.9	21.4	United States -----	1 390.8	1 584.8
Georgia -----	25.4	16.9	Alabama -----	2.6	13.2
Illinois -----	785.4	517.9	Arizona -----	6.9	17.7
Indiana -----	169.5	64.1	California -----	184.2	223.9
Iowa -----	23.3	17.4	Colorado -----	6.0	16.5
Kentucky -----	102.4	35.6	Connecticut -----	76.0	73.3
Maryland -----	21.9	(NA)	Florida -----	36.1	25.8
Massachusetts -----	122.2	233.8	Georgia -----	18.1	25.0
Michigan -----	376.2	111.7	Illinois -----	154.7	141.9
Minnesota -----	206.0	115.1	Indiana -----	43.8	25.9
Mississippi -----	11.0	6.1	Kentucky -----	43.0	19.4
Missouri -----	50.2	44.0	Massachusetts -----	57.0	68.1
New Hampshire -----	11.8	8.7	Michigan -----	25.8	34.6
New Jersey -----	190.9	148.4	Minnesota -----	42.5	33.4
New York -----	214.3	157.4	Mississippi -----	16.0	(NA)
North Carolina -----	64.0	40.6	Missouri -----	55.3	57.6
Ohio -----	513.2	388.6	New Jersey -----	34.4	79.0
Oregon -----	7.2	8.7	New York -----	44.0	116.3
Pennsylvania -----	265.9	206.5	North Carolina -----	9.1	18.9
Rhode Island -----	15.5	15.0	Ohio -----	117.5	119.8
South Carolina -----	8.2	3.3	Oregon -----	12.8	9.6
Tennessee -----	39.3	28.2	Pennsylvania -----	88.3	151.2
Texas -----	64.9	37.7	Texas -----	36.1	29.0
Washington -----	50.6	(NA)	Washington -----	3.8	(NA)
West Virginia -----	8.0	(NA)	Wisconsin -----	30.0	31.1
Wisconsin -----	270.8	207.1			

Table 6c. **Historical Statistics for Product Classes—Value Shipped by All Producers: 1987 and Earlier Years**

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For comparability of product classes and product codes between 1982 and 1987 and explanation of terms, see appendixes]

1987 product code	Product class	1987	1986 <sup>1</sup>	1985 <sup>1</sup>	1984 <sup>1</sup>	1983 <sup>1</sup>	1982	1977	1972
3451-	<b>Screw machine products</b> -----	2 763.3	2 949.4	2 955.2	2 840.7	2 292.0	2 159.7	1 771.4	1 083.1
34511	Automotive screw machine products -----	881.3	1 193.9	1 152.1	1 128.3	829.8	686.7	598.4	245.7
34512	Other screw machine products -----	1 595.3	1 665.6	1 736.3	1 624.6	1 258.1	1 245.3	958.6	638.7
34510	Screw machine products, n.s.k. -----	286.7	89.9	66.8	87.7	204.1	227.8	214.4	198.7
3452-	<b>Bolts, nuts, rivets, and washers</b> -----	4 793.1	4 233.2	4 294.0	4 290.0	3 655.7	3 401.0	3 130.3	1 988.4
34524	Externally threaded fasteners (except aircraft) -----	1 775.1	1 609.3	1 783.6	1 798.1	1 505.1	1 451.0	1 451.2	979.5
34525	Internally threaded fasteners (except aircraft) -----	534.0	512.5	545.1	561.4	484.0	408.6	412.6	248.5
34526	Nonthreaded fasteners (except aircraft) -----	574.5	708.4	692.4	754.3	660.9	526.2	517.2	353.2
34527	Aircraft aerospace fasteners -----	873.1	839.6	702.2	579.0	487.7	516.7	237.9	157.8
34528	Other formed parts -----	481.7	415.1	431.0	475.5	377.1	329.9	284.6	140.3
34520	Bolts, nuts, rivets, and washers, n.s.k. -----	554.7	148.3	139.7	121.8	140.9	168.5	226.8	109.1
3462-	<b>Iron and steel forgings</b> -----	2 903.2	2 560.1	2 808.9	3 175.1	2 706.9	3 161.3	2 966.7	1 572.6
34625	Hot impression die impact, press, and upset steel forgings -----	2 004.7	1 805.2	2 028.7	2 347.0	1 964.3	2 265.5	2 155.4	(NA)
34626	Cold impression die impact, press, and upset steel forgings -----	189.8	260.6	242.3	277.4	239.9	219.8	215.7	(NA)
34627	Seamless rolled ring forgings (ferrous) (see also code 3312a) -----	181.2						113.8	(NA)
34628	Open die or smith forgings (hammer or press) (ferrous) (see also code 3312b) -----	271.8	416.2	449.3	468.8	415.1	591.9	384.7	(NA)
34620	Iron and steel forgings, n.s.k. -----	255.7	78.1	88.6	81.9	87.6	84.1	97.1	(NA)

See footnotes at end of table.



**Table 6c. Historical Statistics for Product Classes—Value Shipped by All Producers: 1987 and Earlier Years—Con.**

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For comparability of product classes and product codes between 1982 and 1987 and explanation of terms, see appendices]

1987 product code	Product class	1987	1986 <sup>1</sup>	1985 <sup>1</sup>	1984 <sup>1</sup>	1983 <sup>1</sup>	1982	1977	1972
3463-	<b>Nonferrous forgings</b> .....	<b>1 061.4</b>	<b>1 134.5</b>	<b>1 221.3</b>	<b>1 242.1</b>	<b>1 187.3</b>	<b>1 210.9</b>	<b>540.4</b>	<b>280.8</b>
34635	Hot impression die impact, press, and upset nonferrous forgings .....	884.7	938.2	1 053.0	1 061.0	979.3	1 011.2	468.1	(NA)
34639	Other nonferrous forgings .....	124.4	187.8	161.9	179.1	202.4	193.7	61.2	(NA)
34630	Nonferrous forgings, n.s.k. ....	52.3	8.6	6.4	2.0	5.5	6.0	11.1	(NA)
3465-	<b>Automotive stampings</b> .....	<b>14 961.0</b>	<b>15 697.7</b>	<b>15 835.0</b>	<b>14 695.6</b>	<b>11 467.4</b>	<b>9 041.2</b>	<b>9 599.8</b>	<b>5 155.8</b>
34650	Job stampings, automotive .....	14 961.0	15 697.7	15 835.0	14 695.6	11 467.4	9 041.2	9 599.8	5 155.8
3466-	<b>Crowns and closures</b> .....	<b>811.4</b>	<b>861.2</b>	<b>817.9</b>	<b>799.8</b>	<b>811.0</b>	<b>790.2</b>	<b>581.0</b>	<b>339.4</b>
34661	Metal commercial closures and metal home canning closures .....	686.2	710.1	662.1	639.1	642.3	627.1	470.7	274.6
34662	Metal crowns .....	115.4	132.8	138.8	141.5	154.8	145.0	104.8	64.8
34660	Crowns and closures, n.s.k. ....	9.8	18.3	17.0	19.2	13.9	18.1	5.6	-
3469-	<b>Metal stampings, n.e.c.</b> .....	<b>7 970.0</b>	<b>7 199.9</b>	<b>7 510.4</b>	<b>7 942.8</b>	<b>7 000.5</b>	<b>6 172.3</b>	<b>4 554.5</b>	<b>2 614.9</b>
34692	Job stampings, except automotive .....	4 252.7	3 801.1	3 901.7	4 010.2	3 279.2	2 908.9	2 199.3	1 283.1
34694	Stamped and spun utensils, cooking and kitchen, aluminum .....	501.2	493.3	537.0	575.2	585.9	508.2	330.1	205.0
34695	Stamped and spun utensils, cooking and kitchen, except aluminum .....	288.6	302.7	378.8	419.6	397.7	367.7	385.4	184.4
34696	Metal spinning products .....	46.5	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
34699	Other stamped and pressed metal end products .....	1 390.8	2 184.7	2 294.6	2 490.1	2 013.1	1 584.8	1 073.0	588.4
34690	Metal stampings, n.e.c., n.s.k. ....	1 490.2	418.0	398.2	447.7	724.6	802.6	566.7	354.0
3471-	<b>Plating and polishing</b> .....	<b>3 828.4</b>	<b>3 389.9</b>	<b>3 402.7</b>	<b>3 385.6</b>	<b>2 807.8</b>	<b>2 680.3</b>	<b>1 775.1</b>	<b>993.4</b>
34710	Electroplating, plating, and polishing .....	3 828.4	3 389.9	3 402.7	3 385.6	2 807.8	2 680.3	1 775.1	993.4
3479-	<b>Metal coating and allied services</b> .....	<b>3 800.2</b>	<b>3 574.7</b>	<b>3 312.8</b>	<b>3 014.4</b>	<b>2 402.2</b>	<b>2 405.2</b>	<b>1 520.5</b>	<b>682.0</b>
34790	Etching, engraving, coating, and allied services .....	3 800.2	3 574.7	3 312.8	3 014.4	2 402.2	2 405.2	1 520.5	682.0

<sup>1</sup>Figures are estimates derived from a representative sample of manufacturing establishments. Standard errors associated with estimates are published in annual survey of manufactures publications for this period.

**Table 7. Materials Consumed by Kind: 1987 and 1982**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendices. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987		1982	
		Quantity <sup>1</sup>	Delivered cost (million dollars)	Quantity <sup>1</sup>	Delivered cost (million dollars)
INDUSTRY 3451, SCREW MACHINE PRODUCTS					
	Materials, parts, containers, and supplies -----	(X)	810.0	(X)	671.4
Mill shapes and forms, except castings:					
Carbon steel:					
331011	Bar and bar shapes ----- 1,000 s tons..	(S)	191.3	**191.5	190.1
331012	Sheet and strip ----- do..	*9.8	9.0	*7.8	4.9
331013	Plates ----- do..	(D)	(D)	( <sup>3</sup> )	( <sup>3</sup> )
331017	Wire and wire products ----- do..	(S)	30.2	(S)	45.4
331019	All other carbon steel mill shapes and forms ----- do..	(S)	5.6	(NA)	(NA)
331058	All other ----- do..	-	-	*1.9	*3.3
Alloy steel, except stainless:					
331021	Bar and bar shapes ----- 1,000 s tons..	(S)	49.0	(S)	25.4
331029	All other ----- do..	(S)	11.2	*5.7	11.3
Stainless steel mill shapes and forms:					
331049	Bars and bar shapes ----- 1,000 s tons..	(S)	48.5	(S)	26.6
331033	Sheet and strip ----- do..	(S)	.9	**2	1.1
331052	All other ----- do..	(S)	5.0	*1.9	4.5
Copper and copper-base alloy:					
335728	Bare wire (for electrical conduction only) ----- mil lb..	(S)	5.9	(S)	3.0
335103	Rod, bar, and bar shapes ----- do..	**143.8	86.4	74.3	57.7
335104	Mechanical wire (including extruded and/or drawn shapes) ----- do..	(S)	.3	(S)	.9
335143	Plate, sheet, and strip, including military cups and discs ----- do..	(D)	(D)	.3	.3
335152	Pipe and tube ----- do..	**7	1.3	]	
Aluminum and aluminum-base alloy:					
335301	Sheet, plate, and foil ----- mil lb..	(S)	1.6	(S)	.9
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. ----- do..	(S)	23.8	(S)	14.2
335008	All other (wire, rolled rod and bar, powder, welded tubing, etc.) ----- do..	(S)	8.1	(S)	5.7
335616	Nickel and nickel-base alloy ----- do..	(S)	2.9	(S)	.4
Castings (rough and semifinished):					
332011	Iron (gray and malleable) ----- 1,000 s tons..	(S)	7.9	2.3	2.2
332045	Steel ----- do..	(S)	1.4	*.3	.7
336005	Aluminum and aluminum-base alloy ----- mil lb..	(S)	2.6	**1.5	1.5
336006	Copper and copper-base alloy ----- do..	(S)	.1	(S)	.2
336008	Other nonferrous ----- do..	(S)	.9	(S)	.4
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes ----- do..	(S)	5	(S)	.4
308007	Plastics products consumed in the form of sheets, rods, tubes, and other shapes ----- do..	(X)	2.2	(X)	1.3
265001	Paperboard boxes, containers, and corrugated paperboard ----- do..	(X)	6.0	(X)	3.1
354401	Special dies, tools, die sets, jigs, and fixtures, except cutting tools for machine tools ----- do..	(X)	12.4	(X)	12.2
970099	All other materials and components, parts, containers, and supplies ----- do..	(X)	94.8	(X)	487.0
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> ----- do..	(X)	199.8	(X)	166.7

See footnotes at end of table.

Table 7. **Materials Consumed by Kind: 1987 and 1982—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendixes. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987		1982	
		Quantity <sup>1</sup>	Delivered cost (million dollars)	Quantity <sup>1</sup>	Delivered cost (million dollars)
	<b>INDUSTRY 3452, BOLTS, NUTS, RIVETS, AND WASHERS</b>				
	Materials, parts, containers, and supplies -----	(X)	1 629.6	(X)	1 262.2
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes ----- 1,000 s tons..	**457.1	212.0	**401.8	251.0
331012	Sheet and strip ----- do..	*206.4	97.4	190.5	92.2
331013	Plates ----- do..	*6.4	2.3	4.1	1.5
331017	Wire and wire products ----- do..	**505.6	317.6	**381.3	249.5
331019	All other carbon steel mill shapes and forms ----- do..	(S)	21.3	61.8	24.1
	Alloy steel, except stainless:				
331021	Bars and bar shapes ----- 1,000 s tons..	**77.1	51.0	**63.9	43.3
331029	All other ----- do..	**68.2	54.3	*53.0	54.4
	Stainless steel mill shapes and forms:				
331049	Bars and bar shapes ----- 1,000 s tons..	(S)	37.3	(S)	21.5
331033	Sheet and strip ----- do..	**4.6	12.4	**6.3	13.4
331052	All other ----- do..	**21.8	57.8	**13.7	34.1
	Copper and copper-base alloy:				
335728	Bare wire (for electrical conduction only) ----- mil lb..	(D)	(D)	*101.9	2.2
335103	Rod, bar, and bar shapes ----- do..	(S)	18.8	18.3	11.3
335104	Mechanical wire (including extruded and/or drawn shapes) ----- do..	*8.0	11.5	(S)	9.7
335143	Plate, sheet, and strip, including military cups and discs ----- do..	10.2	13.3	17.6	25.6
335152	Pipe and tube ----- do..	(D)	(D)	(Z)	(Z)
	Aluminum and aluminum-base alloy:				
335301	Sheet, plate, and foil ----- mil lb..	**1.6	2.0	(S)	2.8
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. ----- do..	(S)	3.7	*7.1	7.6
335008	All other wire, rolled rod and bar, powder, welded tubing, etc. ----- do..	(S)	23.2	(S)	24.9
335616	Nickel and nickel-base alloy ----- do..	(S)	11.1	4.4	13.3
	Castings (rough and semifinished):				
332011	Iron (gray and malleable) ----- 1,000 s tons..	(S)	13.9	*1.9	2.0
332045	Steel ----- do..	(S)	4.4	.3	1.3
336005	Aluminum and aluminum-base alloy ----- mil lb..	.1	1.2	(S)	1.2
336006	Copper and copper-base alloy ----- do..	(D)	(D)	(S)	.2
336008	Other nonferrous ----- do..	(S)	3.0	(S)	4.9
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes ----- do..	*2.9	5.5	**4.7	6.3
308007	Plastics products consumed in the form of sheets, rods, tubes, and other shapes ----- do..	(X)	4.3	(X)	4.5
265001	Paperboard boxes, containers, and corrugated paperboard ----- do..	(X)	18.3	(X)	10.8
354401	Special dies, tools, die sets, jigs, and fixtures, except cutting tools for machine tools ----- do..	(X)	75.8	(X)	39.2
970099	All other materials and components, parts, containers, and supplies ----- do..	(X)	310.1	(X)	*221.3
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> ----- do..	(X)	245.1	(X)	88.1
	<b>INDUSTRY 3462, IRON AND STEEL FORGINGS</b>				
	Materials, parts, containers, and supplies -----	(X)	1 273.2	(X)	1 245.1
	Mill shapes and forms, except castings and forgings:				
	Carbon steel:				
331041	Ingots ----- 1,000 s tons..	48.8	31.3	(S)	49.1
331042	Blooms, billets, and slabs ----- do..	114.0	55.9	*206.4	98.2
331043	Bars ----- do..	502.8	249.5	486.5	291.0
	Alloy steel, except stainless:				
331044	Ingots ----- 1,000 s tons..	83.1	49.3	**30.8	25.1
331045	Blooms, billets, and slabs ----- do..	94.0	102.3	203.0	166.0
331046	Bars ----- do..	339.9	183.0	373.1	225.3
	Stainless steel:				
331047	Ingots ----- 1,000 s tons..	4.9	8.2	(D)	(D)
331048	Blooms, billets, and slabs ----- do..	5.5	15.7	13.0	21.4
331049	Bars ----- do..	*7.0	21.9	*8.2	19.4
	Aluminum and aluminum-base alloy:				
333471	Ingots ----- 1,000 s tons..	(S)	6.7	.2	.4
335001	Mill shapes ----- mil lb..	(S)	3.2	(S)	.6
	Titanium and titanium-base alloy:				
335627	Ingots ----- mil lb..	4 171.7	38.6	(S)	80.3
335628	Mill shapes ----- do..	*2 766.2	24.9		
	Nonferrous forging stock:				
335107	Copper and copper-base alloy ----- mil lb..	(S)	.5	1.2	2.7
335690	Nickel and nickel-base alloy (including nickel-copper alloys) ----- do..	**4.2	18.6	*1.8	7.3
335618	Other nonferrous ----- do..	(D)	(D)	3.2	1.6
	Iron and steel forgings:				
346201	Cold ----- 1,000 s tons..	83.9	117.6	(S)	3.2
346209	Other ----- do..			**174.0	13.4
346310	Aluminum forgings, including impact extrusions ----- do..	(D)	(D)	(D)	(D)
354411	Forging dies ----- mil lb..	(S)	10.1	(S)	12.7
970099	All other materials and components, parts, containers, and supplies ----- do..	(X)	124.7	(X)	126.6
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> ----- do..	(X)	172.1	(X)	98.2

See footnotes at end of table.



**Table 7. Materials Consumed by Kind: 1987 and 1982—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendixes. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987		1982	
		Quantity <sup>1</sup>	Delivered cost (million dollars)	Quantity <sup>1</sup>	Delivered cost (million dollars)
	<b>INDUSTRY 3463, NONFERROUS FORGINGS</b>				
	Materials, parts, containers, and supplies .....	(X)	456.3	(X)	477.4
	Mill shapes and forms, except castings and forgings:				
	Carbon steel:				
331041	Ingots .....				
331042	Blooms, billets, and slabs .....	.5	.4	(S)	8.7
331043	Bars .....				
	Alloy steel, except stainless:				
331044	Ingots .....			(D)	(D)
331045	Blooms, billets, and slabs .....	23.8	31.0	36.2	30.9
331046	Bars .....			2.6	3.8
	Stainless steel:				
331047	Ingots .....			-	-
331048	Blooms, billets, and slabs .....	1.7	4.1	**3.0	3.0
331049	Bars .....			1.1	4.7
	Aluminum and aluminum-base alloy:				
333471	Ingots .....	(D)	( <sup>5</sup> )	(D)	(D)
335001	Mill shapes .....	70.2	78.9	24.8	26.9
	Titanium and titanium-base alloy:				
335627	Ingots .....			6.8	81.3
335628	Mill shapes .....	(S)	85.6	(S)	51.4
	Nonferrous forging stock:				
335107	Copper and copper-base .....	*24.0	26.6	36.6	32.0
335690	Nickel and nickel-base alloy (including nickel-copper alloy) .....	4.7	23.9	3.8	29.8
335618	Other nonferrous .....	(S)	7.3	(S)	8.1
	Iron and steel forgings:				
346201	Cold .....	-	-	-	-
346209	Other .....	-	-	(D)	(D)
346310	Aluminum forgings, including impact extrusions .....	(D)	( <sup>5</sup> )	(D)	(D)
354411	Forging dies .....	(S)	5.8	*.9	.8
970099	All other materials and components, parts, containers, and supplies .....	(X)	5163.8	(X)	64.0
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> .....	(X)	28.9	(X)	6.5
	<b>INDUSTRY 3465, AUTOMOTIVE STAMPINGS</b>				
	Materials, parts, containers, and supplies .....	(X)	8 018.4	(X)	4 276.1
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes .....	**140.9	76.7	*254.7	157.7
331012	Sheet and strip .....	8 654.4	4 862.5	*4 790.9	2 704.0
331013	Plates .....	23.1	11.0	**17.8	7.8
331015	Structural shapes .....	(S)	1.5	(S)	5.1
331017	Wire and wire products .....	*20.5	11.3	30.3	10.0
331018	Tin plate, tin free steel, terneplate, and blackplate .....	13.4	10.2	13.9	12.5
331083	All other .....	(S)	75.8	55.2	37.1
	Alloy steel, except stainless:				
331021	Bars and bar shapes .....	*5.7	5.2	(S)	11.5
331029	All other .....	(S)	64.4	(S)	140.9
	Stainless steel:				
331033	Sheet and strip .....				
331050	All other .....	**65.7	147.9	41.9	92.8
335107	Copper and copper-base alloy .....	*6.2	13.4	(S)	*12.8
	Aluminum and aluminum-base alloy:				
335301	Sheet, plate, and foil .....	**77.0	95.4	(S)	98.7
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. ....	(S)	30.1	(S)	27.5
335008	All other wire, rolled rod and bar, powder, welded tubing, etc. ....	(S)	12.5	**3.7	2.1
	Castings (rough and semifinished):				
332011	Iron (gray and malleable) .....	(S)	5.2	(D)	( <sup>7</sup> )
332045	Steel .....	(S)	56.3	(S)	.8
336005	Aluminum and aluminum-base alloy .....			*.6	1.0
336006	Copper and copper-base alloy .....	(S)	16.0	(D)	( <sup>7</sup> )
336008	Other nonferrous .....			**8.5	8.4
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes .....	12.3	16.4	*28.9	13.3
308007	Plastics products consumed in the form of sheets, rods, tubes, and other shapes .....	(X)	23.6	(X)	36.5
265001	Paperboard boxes, containers, and corrugated paperboard .....	(X)	39.5	(X)	26.8
260003	Paper and paperboard products, except paperboard boxes, containers, and corrugated paperboard .....	(X)	5.4	(X)	6.8
285101	Paints, varnishes, lacquers, shellacs, japans, enamels, and allied products .....	(S)	27.8	(S)	21.7
345001	Bolts, nuts, screws, rivets, washers, and screw machine products .....	(X)	148.7	(X)	69.5
354401	Special dies, tools, die sets, jigs, and fixtures, except cutting tools for machine tools .....	(X)	584.8	(X)	55.7
970099	All other materials and components, parts, containers, and supplies .....	(X)	1 051.6	(X)	7554.6
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> .....	(X)	625.2	(X)	160.5

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 1987 and 1982—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendixes. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987		1982	
		Quantity <sup>1</sup>	Delivered cost (million dollars)	Quantity <sup>1</sup>	Delivered cost (million dollars)
INDUSTRY 3466, CROWNS AND CLOSURES					
	Materials, parts, containers, and supplies -----	(X)	412.4	(X)	419.3
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes ----- 1,000 s tons..	(D)	(D)	-	31.1
331012	Sheet and strip ----- do..	*5.7	3.2		
331013	Plates ----- do..	-	-		
331015	Structural shapes ----- do..	-	-		
331017	Wire and wire products ----- do..	(D)	(D)		
331018	Tin plate, tin free steel, terneplate, blackplate ----- do..	**113.3	107.9	192.6	126.3
331083	All other ----- do..	-	-	-	-
	Alloy steel, except stainless:				
331021	Bars and bar shapes ----- 1,000 s tons..	(D)	(D)	-	-
331029	All other ----- do..	-	-	-	-
	Stainless steel:				
331033	Sheet and strip ----- 1,000 s tons..	(D)	(D)	-	-
331050	All other ----- do..	(D)	(D)	(D)	( <sup>5</sup> )
335107	Copper and copper-base alloy ----- mil lb..	(D)	(D)	(Z)	( <sup>6</sup> (Z))
	Aluminum and aluminum-base alloy:				
335301	Sheet, plate, and foil ----- mil lb..	*55.9	68.7	71.3	106.5
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. ----- do..	(D)	(D)	(Z)	(Z)
335008	All other wire, rolled rod and bar, powder, welded tubing, etc. ----- do..	-	-	-	-
	Castings (rough and semifinished):				
332011	Iron (gray and malleable) ----- 1,000 s tons..	(D)	(D)	(D)	( <sup>5</sup> )
332045	Steel ----- do..	(X)	-	-	-
336005	Aluminum and aluminum-base alloy ----- mil lb..	-	-	-	-
336006	Copper and copper-base alloy ----- do..	-	-	-	-
336008	Other nonferrous ----- do..	-	-	-	-
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes ----- do..	**43.5	20.9	33.9	19.8
308007	Plastics products consumed in the form of sheets, rods, tubes, and other shapes ----- do..	(X)	13.5	(X)	8.8
265001	Paperboard boxes, containers, and corrugated paperboard ----- do..	(X)	5.6	(X)	9.6
260003	Paper and paperboard products, except paperboard boxes, containers, and corrugated paperboard ----- do..	(X)	8.2	(X)	9.5
285101	Paints, varnishes, lacquers, shellacs, japans, enamels, and allied products ----- 1,000 gal..	(S)	22.0	(X)	23.2
345001	Bolts, nuts, screws, rivets, and screw machine products ----- do..	(X)	1.1	(X)	(Z)
354401	Special dies, tools, die sets, jigs, and fixtures, except cutting tools for machine tools ----- do..	(X)	3.7	(X)	4.0
970099	All other materials and components, parts, containers, and supplies ----- do..	(X)	86.6	(X)	565.3
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> ----- do..	(X)	63.4	(X)	15.1
INDUSTRY 3469, METAL STAMPINGS, N.E.C.					
	Materials, parts, containers and supplies -----	(X)	3 461.8	(X)	2 572.6
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes ----- 1,000 s tons..	(S)	40.1	(S)	28.2
331012	Sheet and strip ----- do..	**1 446.1	917.4	**1 203.5	654.2
331013	Plates ----- do..	(S)	32.0	**45.9	20.2
331015	Structural shapes ----- do..	(S)	5.4	(S)	13.8
331017	Wire and wire products ----- do..	(S)	18.9	(S)	12.2
331018	Tin plate, tin free steel, terneplate, and blackplate ----- do..	(S)	65.8	*129.7	109.8
331083	All other ----- do..	(S)	55.5	53.5	44.6
	Alloy steel, except stainless:				
331021	Bars and bar shapes ----- 1,000 s tons..	*28.6	25.9	(S)	9.6
331029	All other ----- do..	(S)	40.0	(S)	75.4
	Stainless steel:				
331033	Sheet and strip ----- 1,000 s tons..	**123.7	157.8	(S)	117.2
331050	All other ----- do..	9.4	26.4	(S)	28.8
335107	Copper and copper-base alloy ----- mil lb..	(S)	77.4	(S)	105.3
	Aluminum and aluminum-base alloy:				
335301	Sheet, plate, and foil ----- mil lb..	*278.7	294.1	(S)	207.2
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. ----- do..	(S)	15.4	(S)	10.2
335008	All other wire, rolled rod and bar, powder, welded tubing, etc. ----- do..	(S)	12.8	(S)	10.4
	Castings (rough and semifinished):				
332011	Iron (gray and malleable) ----- 1,000 s tons..	(S)	3.4	(S)	4.9
332045	Steel ----- do..	(S)	25.3	(S)	10.3
336005	Aluminum and aluminum-base alloy ----- mil lb..	(S)	12.4	(S)	15.5
336006	Copper and copper-base alloy ----- do..	11.6	14.8	(D)	( <sup>7</sup> )
336008	Other nonferrous ----- do..	(S)	2.6	(S)	11.2
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes ----- do..	(S)	5.3	(S)	11.7
308007	Plastics products consumed in the form of sheets, rods, tubes, and other shapes ----- do..	(X)	21.7	(X)	34.7
265001	Paperboard boxes and containers ----- do..	(X)	48.1	(X)	42.1
260003	Paper and paperboard products, except paperboard boxes, and containers ----- do..	(X)	3.9	(X)	5.7
285101	Paints, varnishes, lacquers, shellacs, japans, and enamels ----- 1,000 gal..	(S)	27.2	(X)	33.9
345001	Bolts, nuts, screws, rivets, and screw machine products ----- do..	(X)	50.2	(X)	28.6
354401	Special dies, tools, die sets, jigs, and fixtures, except cutting tools for machine tools ----- do..	(X)	24.9	(X)	18.6
970099	All other materials and components, parts, containers, and supplies ----- do..	(X)	520.1	(X)	7392.2
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> ----- do..	(X)	917.0	(X)	516.1

See footnotes at end of table.



**Table 7. Materials Consumed by Kind: 1987 and 1982—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendixes. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987		1982	
		Quantity <sup>1</sup>	Delivered cost (million dollars)	Quantity <sup>1</sup>	Delivered cost (million dollars)
	<b>INDUSTRY 3471, PLATING AND POLISHING</b>				
	<b>Materials, parts, containers, and supplies -----</b>	<b>(X)</b>	<b>906.8</b>	<b>(X)</b>	<b>822.7</b>
289900	Foundry chemicals, metal treating compounds, and plating compounds -----	(X)	216.2	(X)	322.0
329101	Grinding wheels and other abrasive products, except industrial diamonds -----	(X)	13.5	(X)	12.0
331000	Steel mill shapes and forms, except castings ----- 1,000 s tons..	(S)	66.7	** 46.4	17.9
285101	Paints, varnishes, lacquers, shellacs, japans, and enamels ----- 1,000 gal..	(S)	26.5	(NA)	(NA)
970099	All other materials and compounds, parts, containers, and supplies -----	(X)	230.5	(X)	199.0
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> -----	(X)	353.4	(X)	271.8
	<b>INDUSTRY 3479, METAL COATING AND ALLIED SERVICES</b>				
	<b>Materials, parts, containers, and supplies -----</b>	<b>(X)</b>	<b>1 719.5</b>	<b>(X)</b>	<b>1 045.2</b>
289900	Foundry chemicals, metal treating compounds, and plating compounds -----	(X)	84.9	(X)	221.1
329101	Grinding wheels and other abrasive products, except industrial diamonds -----	(X)	7.1	(X)	4.1
331000	Steel mill shapes and forms, except castings ----- 1,000 s tons..	(S)	556.8	(S)	212.2
285101	Paints, varnishes, lacquers, shellacs, japans, and enamels ----- 1,000 gal..	(S)	228.8	(NA)	(NA)
970099	All other materials and compounds, parts, containers, and supplies -----	(X)	431.0	(X)	499.2
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> -----	(X)	410.9	(X)	108.6

<sup>1</sup>For some establishments, data have been estimated from central unit values which are based on quantity-cost relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: \* 10 to 19 percent estimated; \*\* 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

<sup>2</sup>Total cost of materials of establishments that did not report detailed materials data, including establishments that were not mailed a form.

<sup>3</sup>For 1982, material code 331013 was included with material code 3310158.

<sup>4</sup>For 1982, material codes 346201 and 346209 were included in material code 970099 and are not shown separately for 1987.

<sup>5</sup>Data are combined with material code 970099 to avoid disclosing data for individual companies.

<sup>6</sup>For 1982, data for material code 335107 were reported separately as materials codes 335728, 335102, 335143, and 335152.

<sup>7</sup>For 1982, material codes 333348 and 341151 were included in material code 970099 and are not shown separately for 1987; material codes 332041 and 336006 are combined with material code 970099 to avoid disclosing data for individual companies.





# APPENDIX A.

## Explanation of Terms

This appendix is in two sections. Section 1 includes items requested of all establishments mailed census of manufactures forms including annual survey of manufactures (ASM) forms. Note that this section also includes several items (number of establishments and companies, value added, classes of products, and specialization and coverage ratios) not included on the report forms but derived from information collected on the forms. Section 2 covers supplementary items requested only from establishments included in the ASM sample. Results of the supplementary ASM inquiries are included in table 3c of this report.

### SECTION 1. ITEMS COLLECTED OR DERIVED BASED ON ALL CENSUS OF MANUFACTURES (INCLUDING ASM) REPORT FORMS

**Number of establishments and companies**—As discussed in the Introduction, a separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

In this report, data are shown for establishments in operation at any time during the year. A comparison with the number of establishments in operation at the end of the year will be provided in the Introduction of the General Summary subject report.

**Employment and related items**—The report forms requested separate information on production workers for a specific payroll period within each quarter of the year and on other employees as of the payroll period which included the 12th of March.

**All employees**—This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods.

Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

**Production workers**—This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

**All other employees**—This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It includes sales (including driver salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office function, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations to the plant and utilized as a separate work force.

In addition to reports sent to operating manufacturing establishments, information on employment during the payroll period which included March 12 and annual payrolls also was requested of auxiliary units (e.g., administrative offices, warehouses, and research and development laboratories) of multiestablishment companies. However, these figures are not included in the totals for individual



industries shown in this report. They are included in the general summary and geographic area reports as a separate category.

**Payroll**—This item includes the gross earnings of all employees on the payroll of operating manufacturing establishments paid in the calendar year 1987. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payroll of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' Social Security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' supplemental labor costs, both those required by Federal and State laws and those incurred voluntarily or as part of collective bargaining agreements. (Supplemental labor costs are explained later in this appendix.)

As in the case of employment figures, the payrolls of separate auxiliary units of multiestablishment companies are not included in the totals for individual industries or industry groups.

**Production-worker hours**—This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

**Cost of materials**—This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

The important components of this cost item are (1) all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year, (2) electric energy purchased, (3) fuels consumed for heat, power, or the generation of electricity, (4) work done by

others on materials or parts furnished by manufacturing establishments (contract work), and (5) products bought and resold in the same condition. (See discussion of duplication of data below.)

**Specific materials consumed**—In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. Information on the establishments consuming less than a specified amount (usually \$10,000) of a specific material were not requested to report consumption of that material separately. Also, the cost of materials for the small establishments for which either administrative records or short forms were used was imputed as "not specified by kind." (See the introduction for the importance of administrative records in the industry.)

**Value of shipments**—This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and resold without further processing. Included are all items made by or for the establishments from materials owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of "all other costs" (including company overhead) and profit. (See discussion of duplication of data below.)

**Individual products**—As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1987 census program, information was collected on the output of approximately 11,000 individual product items. The term "product", as used in the census of manufactures, represents the finest level of detail for which output information was requested. Consequently, it is not necessarily synonymous with the term "product" as used in the marketing sense. In some cases, it may be much more detailed and, in other cases, it is more aggregative. For example, "pharmaceutical preparations" was distributed into over 100 terms; whereas, "motor gasoline" was reported as a single item.

Approximately 6,600 of the product items were listed separately on the 1987 census report forms. Data for



about 4,400 products were obtained in the monthly, quarterly, or annual surveys comprising the Current Industrial Reports series of the Census Bureau. Totals for the year 1987 for these items, as derived from the commodity surveys, are shown in the "products shipped" table (table 6a-2).

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1982 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

**Classes of products**—To summarize the product information, the separate products were aggregated into classes of products that, in turn, were grouped into all primary products of each industry. The code structure used is a seven-digit number for the individual product, a five-digit number for the class of product, and a four-digit number for the total primary products in an industry. (See Introduction, Industry Classification of Establishments, for application of the coding structure to the assignment of SIC codes for establishments.)

In the 1987 census, the 11,000 products were grouped into approximately 1,500 separate classes on the basis of general similarity of manufacturing processes, types of materials used, and the like. However, the grouping of products was affected by the economic significance of the class and, in some cases, dissimilar products were grouped because the products were not sufficiently significant to warrant separate classes.

**Duplication in cost of materials and value of shipments**—The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the

addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the United States level and beginning in 1964, for all geographic levels.

**Value added by manufacture**—This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments (see footnote in table 1a), value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

"Value added" avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

**New and used capital expenditures**—For establishments in operation and any known plants under construction, manufacturers were asked to report their new expenditures for (1) permanent additions and major alterations to



manufacturing establishments, and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

The totals for new expenditures include expenditures leased from nonmanufacturing concerns through capital leases, new facilities owned by the Federal Government but operated under contract by private companies, and plant and equipment furnished to the manufacturer by communities and nonprofit organizations. Also excluded are expenditures for used plant and equipment (although reported in the census), expenditures for land, and cost of maintenance and repairs charged as current operating expenses.

Manufacturers also were requested to report the value of all used buildings and equipment purchased during the year at the purchase price. For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. Furthermore, if the establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported under used capital expenditures.

Total expenditures for used plant and equipment is a universe figure; it is collected on all census forms. However, the breakdown of this figure between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form. The data for total new capital expenditures, new building expenditures, and new machinery expenditures, as well as the data for total used expenditures, are shown in table 3b.

**End-of-year inventories**—Respondents were asked to report their 1986 and 1987 end-of-year inventories at cost or market. Effective with the 1982 Economic Censuses, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). In 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

## SECTION 2. ITEMS COLLECTED ONLY ON ASM REPORT FORMS

The following items were collected only from establishments included in the ASM sample:

1. **Supplemental labor costs**—Supplemental labor costs are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not

Because of this change in reporting instructions, the 1982 through 1987 data for inventories and value added by manufacture included in the tables of this report are not comparable to the prior-year data shown in table 1a of this report and in historical census of manufactures and annual survey of manufactures publications.

In using inventory data by stage of fabrication for "all industries" and at the two-digit industry level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by another establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for individual industries, industry groups, and "all manufacturing", which are aggregates of figures reported by establishments in specified industries.

**Specialization and coverage ratios**—These items are not collected on the report forms but are derived from the data shown in table 5b. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

As noted in the introduction, an establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in tables 1a through 5a and data on product shipments shown in tables 6a through 6c.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans.



They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees. While the excluded items do benefit employees and all or part of their cost generally is similar to the items covered in the ASM labor costs statistics, accounting records generally do not provide reliable figures on net employee benefits of these types.

2. **Retirements of depreciable assets**—Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during 1987. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.
3. **Depreciation charges for fixed assets**—This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.
4. **Rental payments**—Total rental payments is collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets, and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

5. **Depreciable assets**—Total value of gross depreciable assets is collected on all census forms.

However, the detail for depreciable assets is collected only on the ASM forms. The data encompass all fixed depreciable assets on the books of establishments at the beginning and end of the year. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets, including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year, rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress. In addition, respondents were requested to make certain that assets at the beginning of the year plus new and used capital expenditures, less retirements, equalled assets at the end of the year.

6. **New and used capital expenditures**—The data for total new capital expenditures, new building expenditures, new machinery expenditures, and total used capital expenditures are collected on all census forms. However, the breakdown between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form. (See further explanation on capital expenditures in section 1.)
7. **Quantity of electric energy consumed for heat and power**—Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the ASM forms. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
8. **Breakdown of new capital expenditures for machinery and equipment**—ASM establishments were requested to separate their capital expenditures for new machinery and equipment into (1) automobiles, trucks, etc., for highway use, (2) computers and peripheral data processing equipment, and (3) all other.

The category "automobiles, trucks, etc., for highway use" is intended to measure expenditures for vehicles designed for highway use that were acquired through a purchase or lease-purchase agreement.

Vehicles normally operating off public highways (vehicles specifically designed to transport materials, property, or equipment on mining, construction, logging, and petroleum development projects) are excluded from this item.

9. **Foreign content of cost of materials**—Establishments included in the ASM sample panel were requested to provide information on foreign-made materials purchased or transferred from foreign sources. This includes materials acquired from a central warehouse or other domestic establishment of the same company but made in an operation outside of the 50 States, District of Columbia, Puerto Rico, or U.S. territories.
10. **Cost of purchased services**—ASM establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, and communication services. Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment, such as painting, roof repairs, replacing parts, and overhauling equipment. Such payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that were capitalized are considered capital expenditures for used buildings and machinery and are, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Three basic approaches were utilized to produce these statistics.

1. For items 1 through 6, data were estimated (imputed) for all non-ASM establishments using the available data in the establishment record and industry-based parameters. The statistics were then generated by simply tabulating all census records including the imputed value for non-ASM establishments and the unweighted value for ASM establishments. Separate imputation rates were developed and are shown in the table. For quantity of purchased electricity for heat and power (item 7), a similar procedure was used; however, the imputation parameters were geographically-based instead of industry-based. For quantities of generated less sold electricity, no imputation was performed for non-ASM establishments. The estimates for these items are simply tabulations of unweighted ASM values.

Since the published statistics for these items were developed from the complete census universe and not just the ASM establishments, there are no sampling variances associated with these statistics. However, there is an unknown level of bias for each of the items due to the imputation of the non-ASM establishments. This bias is felt to be small due to the strong correlation between the items being imputed and the collected items that were used to generate the impute values.

2. For items 8 and 9, the estimates were developed using a ratio estimation methodology. For item 8, an estimate of the breakout of new capital expenditures for machinery and equipment into the three categories was made from ASM establishments reporting these categories. The estimated proportions were then applied to the corresponding Census value for new capital expenditures for machinery and equipment to produce the estimates.

The estimates for item 9, foreign content of cost of materials, were developed in a similar manner based on costs of parts, supplies, and components (item 5a) as the control total for the three categories.

For items 8 and 9, an adjustment ratio of the following form was computed.

$$R_j = \frac{NM_c}{TME_{asm}}$$

where:

$NM_c$  = the census value of new capital expenditures for machinery and equipment

$TME_{asm}$  = the weighted ASM value of new capital expenditures for machinery and equipment from reporters of the detailed breakout data.

3. For item 10, cost of purchased services, the estimates were made by simply tabulating weighted data for all the ASM records that reported the item. A response coverage ratio (a measure of the extent to which respondents reported for each item) is shown in table 3c for the three types of services. It is derived for each item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight, see appendix B) for those ASM establishments that reported the specific inquiry to the weighted total employment for all ASM establishments classified in the industry.



# **APPENDIX B.**

## **Annual Survey of Manufactures (ASM) Sampling and Estimating Methodologies**

### **DESCRIPTION OF SURVEY SAMPLE**

The Annual Survey of Manufactures (ASM) contains two components. The mail portion of the survey is a probability sample of about 56,000 manufacturing establishments selected from a total of about 220,000 establishments. These 220,000 establishments represent all manufacturing establishments of multiunit companies and all single establishment companies mailed schedules in the 1982 Census of Manufactures. This mail portion is supplemented annually by a Social Security Administration list of new manufacturing establishments opened after 1982 and a list of new multiunit manufacturing establishments identified from the Census Bureau's Company Organization Survey.

The 1984 through 1988 ASM sample differs slightly from the previous sample. For the current panel, all establishments of companies with 1982 shipments in manufacturing in excess of \$500 million were included in the survey panel with certainty. There are approximately 500 such companies collectively accounting for approximately 18,000 establishments. For the remaining portion of the mail survey, the establishment was defined as the sampling unit. For this portion, all establishments with 250 employees or more and establishments with a very large value of shipments also were included in the survey panel with certainty. A total of 12,100 establishments were selected from this portion of the universe with certainty. Therefore, of the 56,000 manufacturing establishments included in the ASM panel, approximately 31,000 are selected with certainty. These certainty establishments collectively account for approximately 80 percent of the total value of shipments in the 1982 census.

Smaller establishments in the remaining portion of the mail survey were sampled with probabilities ranging from 0.999 to 0.005 in accordance with mathematical theory for optimum allocation of a sample. The probabilities of selection assigned to the smaller establishments were proportional to measures of size determined for each establishment. The measures of size depend directly upon each establishment's 1982 product class values and the historic variability of the year-to-year shipments of each product class. Product classes displaying more volatile year-to-year change in shipments at the establishment level were sampled at a heavier rate.

This method of assigning measures of size was used in order to maximize the precision (that is, minimize the variance of estimates of the year-to-year change) in the value of product class shipments. Implicitly, it also gave weight differences in employment, value added, and other

general statistics, since these are highly correlated with value of shipments. Individual sample selection probabilities were obtained by multiplying each establishment's final measure of size by an overall sampling fraction coefficient calculated to yield a total expected sample size.

The sample selection procedure gave each establishment in the sampling frame an independent chance of selection. This method of independent selection permits the rotation of small establishments out of a given sample panel without introducing a bias into the survey estimates.

The nonmail portion of the survey includes all single-establishment companies that were tabulated as administrative records in the 1982 Census of Manufactures. Although this portion contained approximately 130,000 establishments, it accounted for less than 2 percent of the estimate for total value of shipments at the total manufacturing level. This portion was not sampled; rather, the data for every establishment in this group were estimated based on selected information obtained annually from the administrative records of the Internal Revenue Service and the Social Security Administration. This administrative-record information, which includes payroll, total employment, industry classification, and physical location of the establishment, was obtained under conditions which safeguard the confidentiality of both tax and census records. Estimates of data other than payroll and employment for these small establishments were developed from industry averages.

The corresponding estimates for the mail and nonmail establishments were added together, along with the base-year differences, as defined in the Description of Estimating Procedure section, to produce the figures shown in this publication.

### **DESCRIPTION OF ESTIMATING PROCEDURES**

Most of the ASM estimates for the years 1983-1986 were computed using a difference estimation procedure. For each item, a base-year difference was developed. This base-year difference is equal to the difference between the 1982 census published number for an item total and the linear ASM estimate of the total for 1982. The ASM linear estimate was obtained by multiplying each sample establishment's data by its sample weight (the reciprocal of its probability of selection) and summing the weighted values.

These base-year differences were then added to the corresponding current-year linear estimates, which include the sum of the estimates for the mail and nonmail establishments, to produce the estimates for the years 1983-1986. Estimates developed by this procedure usually are far more reliable than comparable linear estimates developed from the current sample data alone.



The 1987 sample estimates for the purchased service items, shown in table 3c, are strictly ASM linear estimates, however, developed only from ASM establishments that reported the specific item.

The remaining estimates in table 3c, showing the breakdown of expenditures for new machinery and equipment and costs of parts (separated into purchases from foreign sources and purchases from domestic sources), were computed as ratio estimates. To do this, linear estimates of the new machinery detail items were developed from the ASM establishments and were ratio adjusted to the corresponding census total for new machinery. In a similar fashion, the ASM linear estimates of the detailed purchased materials items were ratio adjusted to the corresponding census total for cost of parts.

## QUALIFICATIONS OF THE DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sampled lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the differences between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of the estimates.

The particular sample selected for the ASM is one of a large number of similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretical, comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected statistics in this report. They are presented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete coverage value would be included in the range:

1. From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.
2. From two standard errors below to two standard errors above the derived estimate for about 19 of 20 of all possible samples.
3. From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown as 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total and almost certain confidence that the interval 47,000 to 53,000 includes the complete coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected in the course of the Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or only moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown.

The concept of complete coverage under the conditions prevailing for the ASM is not identical to the complete coverage of the census of manufactures, as the censuses have been conducted. Nearly all types of operational errors that affect the ASM also occur in the censuses. The ASM and the censuses, are conducted under quite different conditions, and operational errors can be better controlled in the ASM than in the censuses. As a result, for many of the census figures, the errors are of the same order of size as the total errors of the corresponding annual survey estimates. The differences between the census and ASM operating conditions also disturb, to some degree, the comparability of the ASM and census data.

Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be of limited reliability. However, the figure may be combined with higher-level totals, creating a broader aggregate, which then may be of acceptable reliability.



# APPENDIX C.

## Changes in Census of Manufactures

### Product Classes for 1987

[Based on revisions to the Standard Industrial Classification (SIC) Manual, definitions of some product classes were revised for 1987. Listed below are the revisions to the product classes]

1987		1982		1987		1982		1987		1982	
30521	30411	30899 3089A	3079K pt	34919	34948	35483	36233				
30522	30412	32295	32291 pt	34921	3494B	35484	35496				
30523	30413			34922	3494C	35485	35495 pt 35497				
30524	30414	32296	32292 pt	34923	3494D	35533	35531 pt				
30525	30415	32297	32294 pt	34924	3494E	35534	35532 pt				
30526	30416	32298	32291 pt 32292 pt 32294 pt	34925	3494F	35543	35541 35542 pt				
30534	32934			34926	3494G						
30535	32935	32311	32317	34927	3494H	35544	35542 pt				
30536	32936	32312	32317	3523C	35234 pt 35237 35238 pt	35558	35557 pt				
30537	32937	32927	32928 32929			35561	35511				
30538	32938	32961	32963 32965	3523E	35234 pt 35238 pt	35562	35512				
30539	32939	32962	32964 32966	3523F	3523A 3523B	35563	35513 pt				
30611	3069A pt					35591	35591 35699 pt				
30612	3069A pt	33152	33152 34967	35246	35243 35245	35596	35595 pt				
30613	3069A pt	33391	33331	3531A	35311	35597	35494				
30614	3069B pt			3531B	35312	35599	35595 pt 36360 36362				
30615	3069B pt	33398	33321 33323 33399	3531C	35317	35616	3561C				
30616	3069B pt			3531E	35314 pt						
30617	3069B pt	33561 33562 33563	33569	3531F	35316	35631	35631 pt				
3069C	3069C 35557 pt	33630	33611	3531G	35318 pt	35651	35513 pt 35514 pt 35691 pt				
3069E	30310			3531H	35313 pt 35318 pt 35319 pt	35652	35513 pt 35514 pt 35691 pt				
30810	30792	33640	33620 pt 33691 pt 33692 pt 33693 pt	3531K	35319 pt 35361 pt 35371 pt	35676	35672				
30820	3079K pt										
30830	3079K pt	33650	33612	3531M	35313 pt 35314 pt 35319 pt 35372 pt	35692	35694 35695 35696				
30840	30794	33660	33620 pt			35697 35698	35699 pt				
30850	30795	33690	33691 pt 33692 pt 33693 pt	35337	35331 35332 pt	35711	35731 36629 pt				
30861 30862 30863 30864 30865 30866	30797	34234	34232 pt	35338	35332 pt	35712	35734 pt 35735 pt				
				34235	34232 pt 35531 pt 35532 pt			35339	35333		
30870	3079K pt	34236	34233	3533A	35335	35721	35732 pt				
30880	3079J pt 3079K pt			3533B	35336	35722	35734 pt 35735 pt				
30891	3079J pt 3079K pt	34441 34443 34447 34448 34449	34446	35363	35361 pt	35751	35732 pt 36612 pt				
				35364	35362 pt						
30892	3079J pt 3079K pt	34461 34462 34463 34464 34465	34460	35373	35362 pt 35371 pt	35752	35734 pt 35735 pt				
30893	3079J pt 3079K pt			35374	35362 pt 35372 pt	35771	35732 pt				
30894	3079J pt 3079K pt	34696 34699	34699	3541D	35411 35412	35772	35734 pt 35735 pt				
30895	3079J pt	34911 34912 34913 34914 34915 34916	3494A	35430	35650	35781	35743				
30896	2499A pt 3079J pt 3079K pt			35454	35453	35782	35744				
				35455	35452	35783	35745				
30897	3079J pt 3079K pt	34917	34949			3585C	3585A 36993				
						35481	36231				
30898	3079J pt 3079K pt	34918	34947	35482	36232	3585D	3585B 36994 pt				

[Based on revisions to the Standard Industrial Classification (SIC) Manual, definitions of some product classes were revised for 1987. Listed below are the revisions to the product classes]

1987	1982	1987	1982	1987	1982	1987	1982
35931	35996 35997	36411	36410	36991—Con. 36995	36629 pt—Con.	38731—Con.	38734—Con. 38736 38737
35932	35998	36412	36994 pt	36997	35497 pt 36629 pt	39113 39114	39112
35933	35999	36520	36521 pt	36998	36994 pt	39153 39154	39151
35941	35617 35618 35631 pt	36613	35732 pt 36612 pt	3714A	37143	39447	36629 pt 39447
35942	3561A 3561B 35631 pt	36614	36612 pt	37999	37994 37998	39493	39494 pt
35961 35962 35963	35760	36631	36621 36629 pt	38121	38111	39495	3079k pt
36123 36126	36125	36632	36622	38122	36625 pt 36629	39496	39494 pt
36251	36138 pt 36794	36691	36624	38210	38112 38113 pt	39523	39521 39522 pt
36252	36221	36692	36626	38260	38320 38326	39524	39522 pt
36253	36222	36693	36628	38271	38324	39651	39630
36254	36138 pt 36223	36714	36711 36712	38272 38273	38325	39654	39641
36330	36331 36333	36715	36799 pt	38295	36625 pt 38293	39656	39642
36395	36361 36394 36399	36720	36797	38296	38113 pt	39998	39620
		36799	36629 pt 36799 pt	38440	36931	39999	39995
		36950	35732 pt 36792	38450	36930 36933	97372	36522
		36991 36992	36629 pt	38731	38734	97819	36521 pt



## APPENDIX D.

### Changes in Census of Manufactures Product Codes for 1987

[Based on revisions to the Standard Industrial Classification (SIC) Manual, definitions of some product codes were revised for 1987. Listed below are the revisions to the product codes. The terms published and collected are defined as follows: (1) published refers to the code used in the published reports for 1987 and 1982, and (2) collected refers to the code appearing on the report forms for 1987]

1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published
30118 00	30118 00	30118 19 30118 20	30539 77	32939 77	32939 77	30830 11 30830 13 30830 19	30793 01 30793 03 30793 09	3079K 90	30892 20— Con.	3079D 33— Con.	3079J 61 pt —Con. 3079J 66 pt 3079K 93 pt
3011A 39	3011A 39	3011A 33 3011A 35	30539 79	32939 79	32939 79	30840 11	30794 21	30794 21	30892 30	3079D 35	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 93 pt
3011C 29	3011C 29	3011C 24 3011C 26 3011C 27	30611 00	3069A 00	3069A 11	30840 12	30794 22	30794 22			
30521 00	30411 00	30411 00	30612 00	3069A 00	3069A 12 3069A 15	30840 13	30794 23	30794 23			
30522 00	30412 00	30412 00	30613 00	3069A 00	3069A 13 3069A 14 3069A 16	30840 14	30794 24	30794 24			
30523 00	30413 00	30413 00	30614 00	3069B 00	3069B 11	30840 15	30794 25	30794 25	30892 90	3079D 39	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079K 93 pt
30524 00	30414 00	30414 00	30615 00	3069B 00	3069B 12 3069B 13 3069B 14 3069B 19	30840 19	30794 26	30794 26			
30525 00	30415 00	30415 00	30616 00	3069B 00	3069B 21	30850 00	30795 00	30795 00	30893 00	3079F 22	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079K 93 pt
30526 00	30416 00	30416 00	30617 00	3069B 00	3069B 29	30861 00	30797 41	30797 41			
30534 11	32934 11	32934 11	30697 77	30697 77	30697 11 30697 78	30862 10 30862 20 30862 90	30797 51 30797 53 30797 59	30797 42	30894 01	30798 01	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079K 99 pt
30534 13	32934 13	32934 13	30697 77	30697 77	30697 11 30697 78	30863 10 30863 90	30797 61 30797 69	30797 44			
30534 15	32934 15	32934 15	3069C 12	35558 72	35557 72	30864 10 30864 20 30864 30 30864 90	30797 71 30797 73 30797 75 30797 79	30797 45			
30534 17	32934 17	32934 17	3069C 30	35558 76	35557 76	30865 10 30865 20 30865 30 30865 40 30865 90	30797 81 30797 83 30797 85 30797 86 30797 89	30797 46			
30535 11	32935 11	32935 11	3069D 20	3069D 20	3069D 17 3069D 19	30866 10	30797 43	30797 43	30894 02	30798 02	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079K 99 pt
30535 13	32935 13	32935 13	3069D 42	3069D 42	3069D 55 3069D 58	30866 90	30797 47	30797 47			
30535 15	32935 15	32935 15	30810 10	30792 11	30792 10 pt 30792 20 pt 30792 30 pt 30792 40 pt 30792 50 pt 30792 60 pt 30792 70 pt	30870 12 30870 13	30791 01 30791 02	3079K 99	30894 03	30798 03	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt
30535 17	32935 17	32935 17	30810 20	30792 12	30792 10 pt 30792 20 pt 30792 30 pt 30792 40 pt 30792 50 pt 30792 60 pt 30792 70 pt	30880 00	3079F 20	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 94 pt 3079K 99 pt			
30535 19	32935 19	32935 19	30810 30	30792 13	30792 10 pt 30792 20 pt 30792 30 pt 30792 40 pt 30792 50 pt 30792 60 pt 30792 70 pt	30891 01	3079C 11	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30894 04	30798 04	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt
30535 21	32935 21	32935 21	30810 40	30792 14	30792 10 pt 30792 20 pt 30792 30 pt 30792 40 pt 30792 50 pt 30792 60 pt 30792 70 pt	30891 03	3079C 13	3079J			

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30895 01— Con.	30799 01— Con.	3079J 61 pt —Con. 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt	30896 22— Con.	3079A 21— Con.	3079J 61 pt —Con. 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 05— Con.	3079B 25— Con.	3079J 61 pt —Con. 3079J 65 pt 3079J 66 pt 3079K 94 pt 3079K 99 pt	32927 15	32927 15	32929 11 32929 21
									32927 31	32927 31	32929 31
									32927 33	32927 33	32929 33
30895 02	30799 02	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt	30896 23	3079A 23	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 06	3079B 26	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 94 pt 3079K 99 pt	32927 34	32927 34	32929 34
									32927 36	32927 36	32929 36
									32927 41	32927 41	32929 41
									32927 77	32927 77	32929 77
30895 03	30799 03	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt	30896 24	3079A 25	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 07	3079B 27	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 94 pt 3079K 99 pt	32927 78	32927 78	32929 51 32929 73 32929 75
									32927 98	32927 98	32928 13 32929 98
30896 11	3079A 11	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30896 25	3079A 27	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 08	3079B 28	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 94 pt 3079K 99 pt	32961 11	32961 11	32963 11 32965 11
									32961 31	32961 31	32963 31 32965 31
30896 12	3079A 12	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30896 26	3079A 28	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 09	3079B 29	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 94 pt 3079K 99 pt	32961 35	32961 35	32963 35 32965 35
									32961 38	32961 38	32963 38 32965 38
30896 13	3079A 13	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30896 27	2499A 94 3079A 29	2499A 94 3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30899 00	3079F 31	3079K 88	32961 51	32961 51	32963 51 32965 51
						3089A 11	3079F 41	3079K 93 pt 3079K 94 pt 3079K 95 pt 3079K 99 pt	32961 61	32961 61	32963 61 32965 61
30896 14	3079A 14	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30897 01	3079F 25	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	3089A 12	3079F 43	3079K 93 pt 3079K 94 pt 3079K 95 pt 3079K 99 pt	32961 98	32961 98	32963 98 32965 98
						3089A 14	3079F 47	3079K 93 pt 3079K 94 pt 3079K 95 pt 3079K 99 pt	32962 31	32962 31	32964 31 32966 31
30896 15	3079A 15	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30897 09	3079F 27	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 95 pt	3089A 18	3079F 49	3079K 93 pt 3079K 94 pt 3079K 95 pt 3079K 99 pt	32962 34	32962 34	32964 34 32966 34
						32295 00	32295 00	32291 00 pt	32962 36	32962 36	32964 36 32966 36
30896 16	3079A 16	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 01	3079B 21	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 95 pt	3089A 14	3079F 47	3079K 93 pt 3079K 94 pt 3079K 95 pt 3079K 99 pt	32962 45	32962 45	32964 45 32966 45
						32296 00	32296 00	32292 00 pt	32962 51	32962 51	32964 51 32966 51
30896 17	3079A 17	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 02	3079B 22	3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	32297 00	32297 00	32294 00 pt	32962 61	32962 61	32964 61 32966 61
						32298 00	32298 00	32291 00 pt 32292 00 pt 32294 00 pt	32962 83	32962 83	32964 83 32966 83
30896 18	3079A 18	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 03	3079B 23	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	32311 00 32312 00	32311 00 32312 00	32317 00	32962 98	32962 98	32964 98 32966 98
						32620 15	32620 15	32620 14 32620 52 pt	33121 98	33121 98	33121 79 33121 85 33121 98
30896 19	3079A 19	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 04	3079B 24	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	32620 19	32620 19	32620 18 32620 52 pt	3312A 11 3312A 23 3312A 25 3312A 27	3312A 11 3312A 23 3312A 25 3312A 27	3312A 00
						32630 15	32630 15	32630 14 32630 52 pt	3312B 61 3312B 63 3312B 65 3312B 67	3312B 61 3312B 63 3312B 65 3312B 67	3312B 00
30896 21	3079A 20	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079J 66 pt 3079K 99 pt	30898 05	3079B 25	3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt 3079J 65 pt 3079K 94 pt 3079K 99 pt	32630 19	32630 19	32630 18 32630 52 pt	33151 22 33151 23	33151 22 33151 23	33151 21
						32752 11	32752 11	32752 00	33152 01	33152 01	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 33152 21 pt 33152 23 pt 33152 25 pt 33152 27 pt 33152 29 pt 33152 31 pt 33152 33 pt 33152 35 pt 33152 37 pt 33152 39 pt 33152 41 pt 33152 43 pt 33152 45 pt 33152 47 pt 33152 49 pt 33152 51 pt 33152 53 pt 33152 55 pt 33152 57 pt 33152 59 pt 33152 61 pt 33152 63 pt 33152 65 pt 33152 67 pt 33152 69 pt 33152 71 pt 33152 73 pt 33152 75 pt 33152 77 pt 33152 79 pt 33152 81 pt 33152 83 pt 33152 85 pt 33152 87 pt 33152 89 pt 33152 91 pt 33152 93 pt 33152 95 pt 33152 97 pt 33152 99 pt
30896 22	3079A 21	3079J 61 pt 3079J 62 pt			3079J 61 pt 3079J 62 pt 3079J 63 pt 3079J 64 pt	32917 23	32917 23	32917 22 32917 24	33152 03	33152 03	33152 11 pt 33152 13 pt 33152 15 pt 33152 17 pt 33152 19 pt 33152 21 pt 33152 23 pt 33152 25 pt 33152 27 pt 33152 29 pt 33152 31 pt 33152 33 pt 33152 35 pt 33152 37 pt 33152 39 pt 33152 41 pt 33152 43 pt 33152 45 pt 33152 47 pt 33152 49 pt 33152 51 pt 33152 53 pt 33152 55 pt 33152 57 pt 33152 59 pt 33152 61 pt 33152 63 pt 33152 65 pt 33152 67 pt 33152 69 pt 33152 71 pt 33152 73 pt 33152 75 pt 33152 77 pt 33152 79 pt 33152 81 pt 33152 83 pt 33152 85 pt 33152 87 pt 33152 89 pt 33152 91 pt 33152 93 pt 33152 95 pt 33152 97 pt 33152 99 pt



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33152 03— Con.	33152 03— Con.	33152 11 pt — 34967 19 pt	33157 42— Con.	33157 42— Con.	33157 31 pt — 33157 71 pt	33561 66— Con. 33562 78 33563 91 33569 91	33561 66— Con. 33562 78 33563 91 33569 91	33569 92— Con.	34236 21	34236 21	34233 21
									34236 31	34236 31	34233 31
33152 05	33152 05	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 13 pt 34967 17 pt 34967 19 pt	33157 43	33157 43	33157 31 pt 33157 61 pt 33157 71 pt	33630 00	33611 00	33611 00	34236 41	34236 41	34233 41
			33159 44 33159 45 33159 48	33159 44 33159 45 33159 48	33159 49	33640 11	33620 42	33620 42	34236 81	34236 81	34238 81
						33640 21	33691 51	33691 51	34236 99	34236 99	34233 99
33152 07	33152 07	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 11 pt 34967 13 pt 34967 17 pt 34967 19 pt	33159 99	33159 99	33159 77 33159 98	33640 31	33692 31	33692 31	34292 12 34298 99	34292 12 34298 99	34298 98
			33211 21	33211 21	33211 22 pt 33211 24 pt 33211 27 pt 33211 30 pt	33640 41	33693 71	33693 71	34320 01 34320 03	34320 01 34320 03	34320 04
						33640 51	33693 91	33693 91	34320 05 34320 07	34320 05 34320 07	34320 06
			33211 23	33211 23	33211 22 pt 33211 24 pt 33211 27 pt 33211 30 pt	33650 11	33612 11	33612 11	34320 09 34320 11	34320 09 34320 11	34320 08
33152 09	33152 09	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 11 pt 34967 13 pt 34967 17 pt 34967 19 pt	33211 25	33211 25	33211 33 pt 33211 36 pt 33211 39 pt 33211 42 pt	33650 31	33612 31	33612 31	34320 14 34320 25 34320 35	34320 14 34320 25 34320 35	34320 98
						33650 61	33612 61	33612 61	34320 47 34320 48	34320 47 34320 48	34320 79
						33650 73	33612 73	33612 73	34320 67 34320 69	34320 67 34320 69	34320 65
33152 10	33152 10	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 11 pt 34967 13 pt 34967 17 pt 34967 19 pt	33211 26	33211 26	33211 33 pt 33211 36 pt 33211 39 pt 33211 42 pt	33660 20	33620 20	33620 20	34320 71 34320 74 34320 75	34320 71 34320 74 34320 75	34320 98
			33217 31	33217 31	33217 32 pt 33217 34 pt 33217 37 pt 33217 40 pt	33660 21	33620 21	33620 21	34320 76 34320 78	34320 76 34320 78	34320 77
33152 12	33152 12	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 11 pt 34967 13 pt 34967 17 pt 34967 19 pt	33217 33	33217 33	33217 32 pt 33217 34 pt 33217 37 pt 33217 40 pt	33660 22	33620 22	33620 22	34320 80 34320 82	34320 80 34320 82	34320 55
			33217 35	33217 35	33217 43 pt 33217 46 pt 33217 49 pt 33217 52 pt	33660 24	33620 24	33620 24	34320 84 34320 86	34320 84 34320 86	34320 56
						33660 25	33620 25	33620 25	34320 87	34320 87	34320 98 pt
33152 14	33152 14	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 11 pt 34967 13 pt 34967 17 pt 34967 19 pt	33217 36	33217 36	33217 43 pt 33217 46 pt 33217 49 pt 33217 52 pt	33660 26	33620 26	33620 26	34320 88	34320 88	34320 99
						33660 27	33620 27	33620 27	34320 89	34320 89	34320 00
			33252 11	33252 11	33252 12 33252 13	33660 28	33620 28	33620 28	34320 90 34320 91	34320 90 34320 91	34320 40
						33660 29	33620 29	33620 29	34320 92 34320 93	34320 92 34320 93	34320 42
33152 16	33152 16	33152 11 pt 33152 13 pt 33152 17 pt 33152 19 pt 34967 11 pt 34967 13 pt 34967 17 pt 34967 19 pt	33391 00	33331 00	33331 00	33660 30	33620 30	33620 30	34320 94 34320 95	34320 94 34320 95	34320 43
			33392 31	33334 31	33334 31	33660 31	33620 31	33620 31	34320 96 34320 97	34320 96 34320 97	34320 44
			33392 37	33334 37	33334 35 pt	33660 32	33620 32	33620 32	34320 98 34320 99	34320 98 34320 99	34320 98 pt
33152 22	33152 22	33152 33 pt 34967 23 pt	33392 39	33334 39	33334 38 pt	33660 33	33620 33	33620 33	34432 44	34432 44	34432 45
			33392 41	33334 41	33334 41	33991 91 33991 98	33991 91 33991 98	33991 99	34432 46 34432 48	34432 46 34432 48	34432 47
33152 23	33152 23	33152 23 34967 19 pt	33392 43	33334 43	33334 45 pt	34234 11	34234 11	34232 31	34432 52 34432 54 34432 56 34432 98	34432 52 34432 54 34432 56 34432 98	34432 99
33152 25	33152 25	33152 25 34967 21	33392 49	33334 49	33334 48 pt	34234 22	34234 22	34232 83	34433 13	34433 13	34433 12 34433 14 34433 48 pt
33152 30	33152 30	33152 33 pt 34967 23 pt	33392 51	33334 51	33334 35 pt 33334 38 pt 33334 45 pt 33334 48 pt	34234 33	34234 33	34232 85	34433 17	34433 17	34433 16 34433 18 34433 48 pt
33156 15 33156 17	33156 15 33156 17	33156 13	33392 55	33334 55	33334 55	34235 11	34235 11	34232 53	34433 22	34433 22	34433 21 34433 23 34433 48 pt
33156 22 33156 24	33156 22 33156 24	33156 21	33398 01	33321 00	33321 00	34235 12	34235 12	34232 54	34433 32	34433 32	34433 31 34433 33 34433 48 pt
33157 21	33157 21	33157 31 pt 33157 61 pt 33157 71 pt	33398 05	33323 00	33323 00	34235 21	34235 21	34232 56	34433 38	34433 38	34433 45
			33398 73	33398 73	33399 85	34235 22	34235 22	34232 58	34433 39 34433 49 34433 50	34433 39 34433 49 34433 50	34433 48 pt
33157 22	33157 22	33157 31 pt 33157 61 pt 33157 71 pt	33398 99	33398 99	33398 23 33398 98 33399 81	34235 31	34235 31 35533 81	34232 99 pt 35531 85 pt 35532 81 pt	34434 13	34434 13	34434 12 pt
33157 23	33157 23	33157 31 pt 33157 61 pt 33157 71 pt	33416 99	33416 99	33416 51 33416 98	34235 33	34235 33 35533 83	34232 99 pt 35531 85 pt 35532 81 pt	34434 15	34434 15	34434 18 pt
33157 41	33157 41	33157 31 pt 33157 61 pt 33157 71 pt	33542 61	33542 61	33542 51 pt 33542 53 pt	34235 39	34235 39 35533 84	34232 99 pt 35531 85 pt 35532 81 pt			
			33542 63	33542 63	33542 51 pt 33542 53 pt	34236 11	34236 11	34233 11			
33157 42	33157 42	33157 31 pt 33157 61 pt	33561 66	33561 66	33569 92						

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34434 17	34434 17	34434 12 pt	34463 12	34463 12	34460 46	34913 35	3494A 45	3494A 45	34931 57	34931 57	34931 56 34931 58
34434 19	34434 19	34434 18 pt	34463 20 34463 22	34463 20 34463 22	34460 49	34913 47	3494A 46	3494A 46	34931 99	34931 99	34931 63 34931 98
34435 21 34435 23	34435 21 34435 23	34435 20	34464 10	34464 10	34460 54 pt 34460 56 pt	34913 59	3494A 47	3494A 47	34932 10 34932 20	34932 10 34932 20	34932 00
34435 31 34435 33	34435 31 34435 33	34435 35	34464 13	34464 13	34460 54 pt 34460 56 pt	34913 61	3494A 49	3494A 49	34944 21	34944 21	34944 11
34435 37 34435 39	34435 37 34435 39	34435 38	34464 16	34464 16	34460 54 pt 34460 56 pt	34914 11	3494A 51	3494A 51	34944 31 34944 41 34944 51 34944 99	34944 31 34944 41 34944 51 34944 99	34944 19
34438 03 34438 05	34438 03 34438 05	34438 04	34464 18	34464 18	34460 54 pt 34460 56 pt	34914 13	3494A 52	3494A 52	34944 12 34945 14 34945 16 34945 17 34945 99	34945 12 34945 14 34945 16 34945 17 34945 99	34945 98
34438 14 34438 16	34438 14 34438 16	34438 15	34465 10	34465 10	34460 54 pt	34914 15	3494A 53	3494A 53	34961 22 34961 31	34961 22 34961 31	34961 21
34438 17 34438 19	34438 17 34438 19	34438 18	34465 12	34465 12	34460 56 pt	34914 17	3494A 54	3494A 54	34964 41	34964 41	34964 31 pt 34964 61 pt 34964 71 pt 34964 99 pt
34439 15 34439 17 34439 19	34439 15 34439 17 34439 19	34439 21	34482 11	34482 11	34482 17 34482 27	34914 21	3494A 55	3494A 55	34964 31 pt 34964 61 pt 34964 71 pt 34964 99 pt	34964 31 pt 34964 61 pt 34964 71 pt 34964 99 pt	34964 31 pt 34964 61 pt 34964 71 pt 34964 99 pt
34439 31 34439 32 34439 33 34439 34	34439 31 34439 32 34439 33 34439 34	34439 30	34625 11 34625 13 34625 15 34625 17	34625 11 34625 13 34625 15 34625 17	34625 00	34914 23	3494A 56	3494A 56	34964 43	34964 43	34964 31 pt 34964 61 pt 34964 71 pt 34964 99 pt
34439 51 34439 53	34439 51 34439 53	34439 56	34626 11 34626 13 34626 15 34626 17	34626 11 34626 13 34626 15 34626 17	34626 00	34914 25	3494A 57	3494A 57	34964 51	34964 51	34964 31 pt 34964 61 pt 34964 71 pt 34964 99 pt
34441 21	34441 21	34446 37	34627 11 34627 13 34627 15 34627 17	34627 11 34627 13 34627 15 34627 17	34627 00	34915 11	3494A 61	3494A 61	34964 53	34964 53	34964 31 pt 34964 61 pt 34964 71 pt 34964 99 pt
34441 23	34441 23	34446 36	34628 11 34628 13 34628 15 34628 17	34628 11 34628 13 34628 15 34628 17	34628 00	34915 23	3494A 63	3494A 63	34964 55	34964 55	34964 31 pt 34964 61 pt 34964 71 pt 34964 99 pt
34441 27	34441 27	34446 34	34692 20 34692 88 34692 98	34692 20 34692 88 34692 98	34692 99	34915 35	3494A 65	3494A 65	34966 23 34966 25	34966 23 34966 25	34966 13
34441 29	34441 29	34446 32	34696 00 34699 98	34696 00 34699 98	34699 99	34915 47	3494A 67	3494A 67	34966 27 34966 29	34966 27 34966 29	34966 21
34443 11 34443 13	34443 11 34443 13	34446 21	34790 10 34790 11 34790 21	34790 10 34790 11 34790 21	34790 19	34916 23	3494A 32	3494A 32	34968 45 34968 46 34968 47	34968 45 34968 46 34968 47	34968 49
34443 21 34443 23	34443 21 34443 23	34446 25	34911 11	3494A 11	3494A 11	34916 31	3494A 33	3494A 33	34968 81 34968 83 34968 85	34968 81 34968 83 34968 85	34968 98
34447 21	34447 21	34446 47	34911 21	3494A 12	3494A 12	34916 33	3494A 34	3494A 34	34992 12 34992 19	34992 12 34992 19	34992 12 34992 19
34447 25	34447 25	34446 46	34911 23	3494A 13	3494A 13	34916 41	3494A 35	3494A 35	34995 13 34995 15	34995 13 34995 15	34995 13 34995 15
34447 31	34447 31	34446 11	34911 34	3494A 14	3494A 14	34916 53	3494A 36	3494A 36	35111 01 35111 02	35111 01 35111 02	35111 00
34447 41	34447 41	34446 51	34911 38	3494A 15	3494A 15	34916 65	3494A 38	3494A 38	35112 00	35112 00	35112 00 pt
34448 11	34448 11	34446 62 pt	34911 43	3494A 17	3494A 17	34916 77	3494A 71	3494A 71	35112 21	35112 21	35112 01 pt 35112 15 35112 16
34448 13 34448 19	34448 13 34448 19	34446 64 pt	34911 52	3494A 19	3494A 19	34916 79	3494A 75	3494A 75	35112 22	35112 22	35112 01 pt 35112 17
34449 31	34449 31	34446 15	34912 01	3494A 21	3494A 21	34916 98	3494A 98	3494A 98	35112 23	35112 23	35112 08 35112 18
34449 41	34449 41	34446 62 pt 34446 64 pt	34912 11	3494A 22	3494A 22	34917 11	34949 11	34949 11	35112 24	35112 24	35112 09 35112 19
34449 53	34449 53	34446 44	34912 21	3494A 23	3494A 23	34917 13	34949 13	34949 13			
34449 55	34449 55	34446 42	34912 23	3494A 24	3494A 24	34917 15	34949 15	34949 15			
34449 62	34449 62	34446 62 pt	34912 31	3494A 25	3494A 25	34917 27	34949 27	34949 21 34949 23 34949 25			
34449 65	34449 65	34446 64 pt	34912 35	3494A 26	3494A 26	34917 31	34949 31	34949 31			
34449 98	34449 98	34446 98	34912 39	3494A 27	3494A 27	34917 39	34949 39	34949 39			
34461 10	34461 10	34460 07	34912 41	3494A 29	3494A 29	34917 98	34949 98	34949 98			
34461 12	34461 12	34460 09	34912 43	3494A 29	3494A 29	34918 00	34947 00	34947 00			
34461 15	34461 15	34460 12	34913 11	3494A 39	3494A 39	34919 00	34948 00	34948 00			
34461 17	34461 17	34460 17	34913 23	3494A 43	3494A 43	34921 00	3494B 00	3494B 00			
34462 10	34462 10	34460 31	34922 00	3494C 00	3494C 00	34922 00	3494C 00	3494C 00			
34462 12	34462 12	34460 36	34923 00	3494D 00	3494D 00	34923 00	3494D 00	3494D 00			
34462 22	34462 22	34460 22	34924 00	3494E 00	3494E 00	34924 00	3494E 00	3494E 00			
34462 26	34462 26	34460 51	34925 00	3494F 00	3494F 00	34925 00	3494F 00	3494F 00			
34463 10	34463 10	34460 41	34926 00	3494G 00	3494G 00	34926 00	3494G 00	3494G 00			
			34927 00	3494H 00	3494H 00	34927 00	3494H 00	3494H 00			



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35112 74	35112 74	35112 75 pt	3531E 00	3531E 00	35314 00 pt	35337 22 35337 23	35337 22 35337 23	35331 41	35364 03	35364 03	35362 09 35362 15 pt
35112 76	35112 76	35112 75 pt 35112 77	3531F 00	3531F 00	35316 00	35337 24 35337 25	35337 24 35337 25	35331 46	35364 04	35364 04	35362 11 35362 15 pt
35112 79 35112 83	35112 79 35112 83	35112 00 pt	3531G 00	3531G 00	35318 00 pt	35337 26 35337 27	35337 26 35337 27	35331 43	35364 05	35364 05	35362 13 35362 15 pt
35199 01	35199 01	35199 98 pt	3531H 00	3531H 00	35313 00 pt 35318 00 pt 35319 85	35337 44	35337 44	35331 44	35364 06	35364 06	35362 14 35362 15 pt
35199 33	35199 26	35199 26	3531K 06	3531K 06	35319 06	35337 45	35337 45	35331 45	35364 17	35364 17	35362 55 pt
35199 41 35199 42	35199 41 35199 42	35199 03	3531K 07	3531K 07	35319 07	35337 47	35337 47	35331 47	35364 52	35364 52	35362 52
35199 43 35199 44	35199 43 35199 44	35199 04	3531K 11	3531K 11	35319 11	35337 48	35337 48	35331 48	35364 54	35364 54	35362 55 pt
35199 45 35199 46	35199 45 35199 46	35199 05	3531K 20	3531K 20	35319 20	35337 59	35337 59	35331 59	35373 01 35373 02	35373 01 35373 02	35371 23 pt
35199 47	35199 47	35199 06 pt 35199 07 pt	3531K 21	3531K 21	35319 21	35337 61	35337 61	35332 61 pt	35373 03	35373 03	35371 11 pt
35199 48	35199 48	35199 06 pt 35199 07 pt	3531K 22 3531K 24	3531K 22 3531K 24	35319 23	35338 31	35338 31	35332 31	35373 05	35373 05	35371 36 pt 35371 37 pt 35371 38 pt
35199 51 35199 52	35199 51 35199 52	35199 14	3531K 25	3531K 25	35319 25	35338 51	35338 51	35332 51	35373 06	35373 06	35371 36 pt 35371 37 pt 35371 38 pt
35199 53 35199 54	35199 53 35199 54	35199 15	3531K 27	3531K 27	35319 27	35338 55	35338 55	35332 55	35373 08	35373 08	35371 11 pt
35199 55 35199 56	35199 55 35199 56	35199 16	3531K 53 3531K 55	3531K 53 3531K 55	35319 52	35338 98	35338 98	35332 98	35373 12	35373 12	35371 61
35199 57 35199 58	35199 57 35199 58	35199 17	3531K 61	35363 36	35361 36	35338 99	35338 99	35332 61 pt	35373 15	35373 15	35371 23 pt 35371 41 pt
35199 59 35199 60	35199 59 35199 60	35199 18	3531K 70	3531K 70	35319 70	35339 12	35339 12	35333 12	35373 16	35373 16	35371 11 pt
35199 61 35199 62	35199 61 35199 62	35199 19	3531K 74	3531K 74	35319 72 35319 73	35339 13	35339 13	35333 13	35373 17	35373 17	35371 36 pt 35371 37 pt 35371 38 pt 35371 41 pt
35199 91	35199 91	35199 22 pt 35199 23 pt 35199 28 pt 35199 29 pt 35199 98 pt	3531K 77	3531K 77	35319 75 35319 76	35339 14	35339 14	35333 14	35373 18	35373 18	35371 11 pt
35199 92	35199 92	35199 22 pt 35199 23 pt 35199 28 pt 35199 29 pt 35199 98 pt	3531K 78	3531K 78	35319 72 35319 73	35339 19	35339 19	35333 19	35373 19	35373 19	35371 65
35239 26	35239 26	35239 21 35239 25	3531K 82	3531K 82	35319 82	35339 21	35339 21	35333 21	35373 21	35373 21	35371 55
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	3531K 82	3531K 82	35319 82	35339 21	35339 21	35333 21	35373 25	35373 25	35371 99 pt
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	3531K 90	3531K 40 35373 90	35319 41 35371 91 35371 93	35339 53	35339 53	35333 53	35373 26	35373 26	35371 75
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35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	3531M 03	3531M 03	35314 00 pt	35339 61	35339 61	35333 61	35373 31	35373 31	35371 71
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	3531M 05	3531M 05	35319 84 pt 35319 86 pt	35339 65	35339 65	35333 65	35373 32	35373 32	35371 85
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35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	3531M 15	3531M 19	35319 84 pt 35319 86 pt 35374 15 35372 85 pt	35339 82	35339 82	35333 82	35374 11	35374 11	35372 11
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	35329 33	35329 33	35329 31 pt 35329 35 pt	35363 01 35363 02 35363 03	35363 01 35363 02 35363 03	35361 11	35374 17	35364 57	35362 57
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	35329 34	35329 34	35329 31 pt 35329 35 pt	35363 13	35363 13	35361 13	35374 19	35374 19	35372 85 pt
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	35329 37 35329 38 35329 41 35329 43	35329 37 35329 38 35329 41 35329 43	35329 39	35363 15	35363 15	35361 14	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 41
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	35329 71 35329 73 35329 75	35329 71 35329 73 35329 75	35329 79	35363 16	35363 16	35361 16	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 41
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	35337 11	35337 11	35331 11	35363 32	35363 32	35361 33 35361 39 pt	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 41
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	35337 12	35337 12	35331 12	35363 34	35363 34	35361 35 35361 39 pt	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 41
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	35337 14	35337 14	35331 14	35363 37 35363 38	35363 37 35363 38	35361 39 pt	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 41
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	35337 15	35337 15	35331 15	35363 45	35363 45	35361 45	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 41
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	35337 16	35337 16	35331 16	35363 45	35363 45	35361 45	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 41
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	35337 17	35337 17	35331 17	35364 01	35364 01	35362 07 35362 15 pt	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 41
35239 31	35239 31	35239 01 35239 02 35239 03 35239 04 35239 05 35239 06 35239 07 35239 08 35239 09 35239 11 35239 12 35239 19 35239 30	35337 21	35337 21	35331 21	35364 02	35364 02	35362 08 35362 15 pt	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 21 35419 22 35419 23 35419 24 35419 25 35419 26	35419 41



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35430 98	35650 98	35650 98	35462 72	35462 72	35462 73 35462 74 35462 75 35462 76 35462 77 35462 78	35484 09	35496 19	35496 19	35543 03	35543 03	35541 28 pt 35542 73 pt
35441 23 35441 25	35441 23 35441 25	35441 29				35485 01	35497 61	35497 61	35543 04	35543 04	35541 25 35542 73 pt
35441 42 35441 44 35441 83 35441 89	35441 42 35441 44 35441 83 35441 89	35441 91				35485 02	35497 65	35497 65			
			35463 12 35463 14	35463 12 35463 14	35462 19	35485 03	35497 67	35497 67	35543 05	35543 05	35541 28 pt 35542 73 pt
35442 15	35442 15	35442 21 35442 25 pt				35485 04	35497 73	35497 73			
			35473 48 35473 51 35473 52	35473 48 35473 51 35473 52	35473 56	35485 05	35497 74	35497 63 35497 75	35543 09	35543 09	35541 31 35542 73 pt
35442 16	35442 16	35442 25 pt							35543 11	35543 11	35541 49 pt 35542 73 pt
35442 17 35442 18 35442 19 35442 23	35442 17 35442 18 35442 19 35442 23	35442 62 pt	35481 01	36231 14	36231 14	35485 07	35495 55	35495 55	35543 12	35543 12	35541 49 pt 35542 73 pt
			35481 02	36231 16	36231 16						
			35481 03	36231 31	36231 31	35492 13 35492 18	35492 13 35492 18	35492 19	35543 13	35543 13	35541 45 35542 73 pt
35442 41 35442 42	35442 41 35442 42	35442 33	35481 04	36231 32	36231 32	35495 01 35495 02 35495 03	35495 01 35495 02 35495 03	35495 10	35543 14	35543 14	35541 49 pt 35542 73 pt
35442 45 35442 47 35442 67	35442 45 35442 47 35442 67	35442 62 pt	35481 05	36231 33	36231 33						
			35481 06	36231 35	36231 35	35495 92 35495 95	35495 92 35495 95	35495 98	35543 15	35543 15	35541 41 35541 43 35541 49 pt 35542 73 pt
35451 53	35451 53	35451 43 35451 44	35481 07	36231 52	36231 52						
			35481 08	36231 53	36231 53	35521 38	35521 38	35521 42 35521 47	35543 21	35543 21	35541 59 pt 35542 73 pt
35451 54	35451 54	35451 48 35451 49	35481 09	36231 54	36231 54	35521 39	35521 39	35521 46 35521 48			
35454 12	35454 12	35453 12	35481 11	36231 56	36231 56	35521 54 35521 56	35521 54 35521 56	35521 55	35543 22	35543 22	35541 51 35542 73 pt
35454 14	35454 14	35453 14	35481 12	36231 57	36231 57						
35454 17	35454 17	35453 17	35481 19	36231 59	36231 59	35521 68 35521 69	35521 68 35521 69	35521 67	35543 23	35543 23	35541 53 35542 73 pt
35454 31	35454 31	35453 31							35543 24	35543 24	35541 54 pt 35541 59 pt 35542 73 pt
35454 37	35454 37	35453 37	35482 01 35482 02	36232 01 36232 02	36232 41	35521 84 35521 85	35521 84 35521 85	35521 86			
35454 38	35454 38	35453 38	35482 03	36232 11	36232 11	35522 79	35522 79	35522 72 35522 99	35543 25	35543 25	35541 54 pt 35541 59 pt 35542 73 pt
35454 41	35454 41	35453 41	35482 04	36232 23	36232 23						
35454 43	35454 43	35453 43	35482 05	36232 25	36232 25	35533 11	35533 11	35531 11	35543 26	35543 26	35541 56 35541 59 pt 35542 73 pt
35454 45	35454 45	35453 45	35482 06	36232 31	36232 31	35533 13	35533 13	35531 13			
35454 51	35454 51	35453 51	35482 07	36232 43	36232 59 pt 36232 64 pt	35533 15	35533 15	35531 15	35544 01	35544 01	35542 89
35454 59	35454 59	35453 59	35482 08	36232 45	36232 59 pt 36232 64 pt 36232 68 pt	35533 19	35533 19	35531 62	35544 02	35544 02	35542 83
35454 98	35454 98	35453 98				35533 21 35533 23	35533 21 35533 23	35531 73 pt	35544 03 35544 04	35544 03 35544 04	35542 85
35455 11	35455 11	35452 11	35482 11	36232 52	36232 52	35533 25 35533 27	35533 25 35533 27	35531 75 pt	35544 05	35544 05	35542 87
35455 13	35455 13	35452 13	35482 12	36232 54	36232 54				35551 02	35551 02	35551 01 35551 03 35551 05 35551 08
35455 15	35455 15	35452 15	35482 13	36232 55	36232 55	35533 29	35533 29	35531 98 pt			
35455 17	35455 17	35452 17	35482 14	36232 58	36232 58	35533 31	35533 31	35531 73 pt			
35455 21	35455 21	35452 21	35482 15	36232 62	36232 61 36232 65	35533 33	35533 33	35531 75 pt	35553 05	35553 05	35553 01 35553 02 35553 04
35455 61	35455 61	35452 61				35533 35 35533 37	35533 35 35533 37	35531 98 pt			
35455 65	35455 65	35452 65	35482 16	36232 66	36232 64 pt 36232 68 pt				35553 08	35553 08	35553 11 35553 12
35455 71	35455 71	35452 71	35483 05	36233 13	36233 13	35533 39	35533 39	35531 17 35531 73 pt 35531 75 pt 35531 98 pt	35553 09	35553 09	35553 45 35553 52 35553 57
35455 81 35455 83	35455 81 35455 83	35452 99 pt	35483 06	36233 23	36233 23						
			35483 07	36233 31	36233 31	35533 87	35533 87	35531 87	35558 02 35558 09	35558 02 35558 09	35557 01
35455 91 35455 92	35455 91 35455 92	35452 92	35483 08	36233 52	36233 52	35534 01 35534 02 35534 03	35534 01 35534 02 35534 03	35532 21	35558 69	35558 69	35557 69
35455 93	35455 93	35452 99 pt	35483 09	36233 61	36233 61				35558 83	35558 83	35557 83
35455 94	35455 94	35452 94	35483 11	36233 71	36233 71	35534 04 35534 05 35534 06 35534 07 35534 08 35534 09	35534 04 35534 05 35534 06 35534 07 35534 08 35534 09	35532 98	35558 85	35558 85	35557 85
35455 95	35455 95	35452 95	35483 19	36233 81	36233 81				35558 87	35558 87	35557 87
35455 96 35455 97 35455 98	35455 96 35455 97 35455 98	35452 99 pt	35484 01	35496 01	35496 01				35558 89	35558 89	35557 89
			35484 02	35496 05	35496 05	35534 11	35534 11	35532 81 pt	35558 99	35558 99	35557 99
35462 42 35462 44	35462 42 35462 44	35462 43	35484 03	35496 09	35496 09	35543 01	35543 01	35541 11 35542 73 pt	35561 02	35511 02	35511 41 pt 35511 99 pt
35462 47	35462 47	35462 45 35462 49	35484 04	35496 15	35496 15	35543 02	35543 02	35541 21 35541 27 35542 73 pt	35561 05	35511 05	35511 73
			35484 05	35496 17	35496 17				35561 06	35511 06	35511 83



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35561 07	35511 07	35511 91	35593 01	35593 11	35593 11	35599 13	35599 13	35595 41 pt 35595 98 pt	35616 00	35616 00	3561C 00
35561 08	35511 08	35511 99 pt	35593 03	35593 31	35593 31	35599 15	35599 15	35595 41 pt 35595 98 pt	35645 46 35645 47	35645 46 35645 47	35645 49
35561 09	35511 09	35511 41 pt	35593 05	35593 32	35593 32				35646 10 35646 20	35646 10 35646 20	35646 00
35561 11 35561 19 35561 21	35511 11 35511 19 35511 21	35511 99 pt	35593 07	35593 34	35593 34	35599 17	35599 17	35595 41 pt 35595 98 pt	35651 01	35514 15 35691 15	35514 15 35691 15
35562 11	35512 11	35512 11	35593 09	35593 35	35593 35	35599 19	35599 19	35595 41 pt 35595 98 pt			
35562 21	35512 21	35512 21	35593 13	35593 13	35593 53 35593 54	35599 22	35599 22	35595 41 pt 35595 98 pt	35651 03	35514 26 35691 26	35514 26 35691 26
35562 31	35512 31	35512 31	35593 15	35593 61	35593 61	35599 25	35599 25	35595 41 pt 35595 98 pt			
35562 41	35512 41	35512 41	35593 17	35593 71	35593 71	35599 27 35599 29	35599 27 35599 29	35595 41 pt	35651 05	35514 30 35691 30	35514 30 35691 30
35562 51	35512 51	35512 51	35593 19	35593 72	35593 72						
35562 65	35512 65	35512 61 35512 92 pt	35593 21 35593 23 35593 25	35593 21 35593 23 35593 25	35593 79	35599 35 35599 37	35599 35 35599 37	35595 49	35651 07	35514 33 35691 33	35514 33 35691 33
35562 71	35512 71	35512 71	35593 27 35593 28 35593 29	35593 27 35593 28 35593 29	35593 81						
35562 75	35512 75	35512 75	35594 01	35594 11	35594 11	35599 43 35599 45	35599 43 35599 45	35595 52	35651 09	35514 41 35691 41	35514 41 35691 41
35562 85	35512 85	35512 92 pt									
35562 91	35512 91	35512 87 35512 92 pt	35594 05	35594 51	35594 51	35599 49 35599 51	35599 49 35599 51	35595 98 pt	35651 12	35514 53 35691 53	35514 53 35691 53
35563 01	35513 01	35513 59 pt	35594 07	35594 71	35594 71						
35563 02	35513 02	35513 39	35596 01 35596 03 35596 05	35596 01 35596 03 35596 05	35595 95	35599 57 35599 59	35599 57 35599 59	35595 92	35651 14	35514 55 35691 55	35514 55 35691 55
35563 03 35563 04	35513 03 35513 04	35513 59 pt									
35563 05	35513 05	35513 23 pt 35513 59 pt	35596 13 35596 15 35596 17 35596 19	35596 13 35596 15 35596 17 35596 19	35599 65	35599 67	35599 67	35595 86 pt	35651 16	35514 71 35691 71	35514 71 35691 71
35563 06	35513 06	35513 52 35513 59 pt									
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35563 08	35513 08	35513 49									
35563 09	35513 09	35513 59 pt	35596 31 35596 33 35596 35 35596 37 35596 39	35596 31 35596 33 35596 35 35596 37 35596 39	35599 77 35599 79	35599 77 35599 79	35595 94	35595 98 pt	35651 21	35514 84 35691 84	35514 84 35691 84 pt
35563 11	35513 11	35513 13									
35563 12	35513 12	35513 23 pt 35513 59 pt	35597 01	35494 01	35494 01	35599 82	35599 82	35595 62 pt	35652 00	35514 91 35691 91	35513 83 pt 35514 91 35691 91
35563 14	35513 14	35513 59 pt									
35563 15	35513 15	35513 29 35513 59 pt	35597 03	35494 05	35494 05	35599 85	35599 85	35595 62 pt 35595 98 pt	35674 02	35674 02	35674 17
35563 21	35513 21	35513 83 pt	35597 04	35494 07	35494 07						
35591 01 35591 03 35591 05	35591 01 35591 03 35591 05	35591 00 pt	35597 05	35494 09	35494 09	35599 88	36362 74	36362 74	35674 04	35674 04	35674 11 pt 35674 19 pt 35674 31 pt
35591 07	35591 07 35698 33	35591 00 pt 35699 97 pt	35597 09	35494 11	35494 17 35494 19 pt	35599 89	36362 75	36362 75	35675 01	35675 01	35675 51
35591 09 35591 11	35591 09 35591 11	35591 00 pt	35597 11	35494 13	35494 19 pt	35599 90	36362 85	36362 85			
35591 13	35591 13 35698 34	35591 00 pt 35699 97 pt	35599 01 35599 03	35599 01 35599 03	35595 11	35599 92 35599 93 35599 94 35599 95 35599 96 35599 97	35599 92 35599 93 35599 94 35599 95 35599 96 35599 97	35595 98 pt	35675 11 35675 12	35675 11 35675 12	35675 91
35591 15	35591 15	35591 00 pt	35599 05 35599 07	35599 05 35599 07	35595 21	35599 99	35599 99	35595 88 35595 98 pt	35676 00	35676 00	35672 00 pt
35592 01	35592 21	35592 21	35599 09 35599 11	35599 09 35599 11	35595 32				35676 01	35676 01	35672 11
35592 03	35592 33	35592 33									
35592 05	35592 35	35592 35									
35592 07	35592 54	35592 54									
35592 09 35592 11	35592 09 35592 11	35592 98 pt									
35592 15	35592 15	35592 41 35592 42 35592 98 pt									
35592 19	35592 97	35592 97									



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35676 02	35676 02	35672 21	35751 00	35732 40 36612 10	35732 00 pt 36612 00 pt	35892 98	35892 98	35892 89 pt	35963 03	35763 03	35760 62
35676 03	35676 03	35672 61				35892 99	35892 99	35892 93 pt	35963 05	35763 05	35760 63
35676 04	35676 04	35672 00 pt	35752 00	35733 40	35734 30 pt 35735 51 pt	35893 01	35893 01	35893 11	35963 09	35763 09	35760 84
35676 05	35676 05	35672 41 pt				35893 02	35893 02	35893 08			
35676 06	35676 06	35672 00 pt	35771 00	35732 30 35732 61	35732 00 pt	35893 09	35893 09	35893 11	36122 02	36122 02	36122 00
35676 17	35676 17	35672 41 pt				35772 00	35733 30	35734 30 pt 35735 51 pt	35893 09	35893 09	35893 11
35676 19	35676 19		35781 00	35743 00	35743 00				35921 01	35921 01	35921 11
35681 11	35681 11	35681 15				35782 00	35744 00	35744 00	35921 02	35921 02	35921 13
35681 13	35681 13		35783 00	35745 00	35745 10 35745 31				35921 03	35921 03	35921 71
35683 36	35683 36	35683 99 pt				3579A 00	3579A 00	3579A 20 3579A 40 3579A 41 3579A 44 3579A 50 3579A 55	35921 05	35921 05	35921 72
35683 93	35683 93		3579A 00	3579A 00	3579A 20 3579A 40 3579A 41 3579A 44 3579A 50 3579A 55				35922 01	35922 01	35922 21
35683 95	35683 95					3579A 00	3579A 00	3579A 20 3579A 40 3579A 41 3579A 44 3579A 50 3579A 55	35922 02	35922 02	35922 23
35683 98	35683 98	35683 91 35683 99 pt	35820 35 35820 36	35820 35 35820 36	35820 24				35922 03	35922 03	35922 51
35692 00	35692 00	35694 00 35695 00 35696 00				35856 00	35856 00	35856 11 35856 30	35922 04	35922 04	35922 53
35693 04	35693 04	35693 01 pt 35693 02 pt 35693 03 pt	35859 05 35859 07	35859 05 35859 07	35859 09				35922 05	35922 05	35922 55
35693 05	35693 05	35693 01 pt 35693 02 pt 35693 03 pt				3585C 00	3585A 10 3585A 20 36993 00	3585A 10 3585A 20 36993 00	35922 06	35922 06	35922 57
35693 06	35693 06	35693 01 pt 35693 02 pt 35693 03 pt	3585D 10	3585B 10	3585B 10				35923 01	35923 01	35923 61
35697 00	35697 00	35699 97 pt				3585D 20	3585B 20	3585B 20	35923 02	35923 02	35923 63
35698 01	35698 01	35699 31	3585D 30	3585B 30	3585B 30				35931 00	35991 00	35996 00 35997 00
35698 02	35698 02					3585D 40	3585B 40	3585B 40	35932 00	35998 00	35998 00
35698 03	35698 03	35699 32	3585D 50	3585B 50	3585B 50				35933 00	35999 00	35999 00
35698 04	35698 04					3585D 60	3585B 60	3585B 60	35941 10	35619 00	35617 00 35618 00
35698 05	35698 05	35699 33	3585D 70	3585B 70	3585B 70				35941 20	35631 50	35631 40 pt
35698 06	35698 06					3585D 80	3585B 72 36994 07	3585B 72 36994 07	35942 10	3561D 00	3561A 00 3561B 00
35698 07	35698 07	35699 35	35860 89	35860 89	35860 21 35860 41 35860 88				35942 20	35631 60	35631 40 pt
35698 08	35698 08					35892 03	35892 03	35892 01 pt 35892 02 pt	35961 01	35761 01	35760 13
35698 11	35698 11	35699 41	35892 04	35892 04	35892 02 pt				35961 03	35761 03	35760 15
35698 12	35698 12					35892 05	35892 05	35892 01 pt 35892 02 pt	35961 05	35761 05	35760 21
35698 13	35698 13	35699 43	35892 06	35892 06	35892 01 pt 35892 02 pt				35961 07	35761 07	35760 23
35698 14	35698 14					35892 07	35892 07	35892 93 pt	35961 09	35761 09	35760 24
35698 15	35698 15	35699 45	35892 26	35892 26	35892 25 35892 28				35961 11	35761 11	35760 26
35698 16	35698 16					35892 27	35892 27	35892 93 pt	35961 13	35761 13	35760 28
35698 17	35698 17	35699 51	35892 43	35892 43	35892 61 35892 89 pt				35961 15	35761 15	35760 22
35698 18	35698 18					35892 44	35892 44	35892 89 pt	35961 17	35761 17	35760 30
35698 21	35698 21	35699 51	35892 45	35892 45	35892 93 pt				35961 19	35762 01	35760 32
35698 22	35698 22					35892 76	35892 76	35892 93 pt	35962 01	35762 01	35760 33
35698 23	35698 23	35699 61	35892 89	35892 89	35892 93 pt				35962 03	35762 03	35760 33
35698 24	35698 24					35892 91	35892 91	35892 93 pt	35962 05	35762 05	35760 36
35698 25	35698 25	35699 71	35892 85	35892 85	35892 86				35962 07	35762 07	35760 37 pt
35698 26	35698 26	35699 73				35892 87	35892 87	35892 88	35962 09	35762 09	35760 41
35698 27	35698 27	35699 74	35892 88	35892 88	35892 88				35962 11	35762 11	35760 45
35698 28	35698 28					35892 91	35892 91	35892 93 pt	35962 13	35762 13	35760 52
35698 31	35698 31	35699 75	35892 85	35892 85	35892 86				35962 15	35762 15	35760 53
35698 32	35698 32					35892 87	35892 87	35892 88	35962 17	35762 17	35760 57 pt
35698 33	35698 33	35699 76	35892 88	35892 88	35892 88				35962 19	35762 19	35760 61
35698 34	35698 34	35699 77				35892 89	35892 89	35892 89	35963 01	35763 01	35760 61
35698 35	35698 35	35699 78	35892 90	35892 90	35892 90				35963 02	35763 02	35760 62
35698 36	35698 36	35699 79				35892 91	35892 91	35892 91	35963 03	35763 03	35760 63
35698 37	35698 37	35699 80	35892 92	35892 92	35892 92				35963 04	35763 04	35760 64
35698 38	35698 38	35699 81				35892 93	35892 93	35892 93	35963 05	35763 05	35760 65
35698 39	35698 39	35699 82	35892 94	35892 94	35892 94				35963 06	35763 06	35760 66
35698 40	35698 40	35699 83				35892 95	35892 95	35892 95	35963 07	35763 07	35760 67
35698 41	35698 41	35699 84	35892 96	35892 96	35892 96				35963 08	35763 08	35760 68
35698 42	35698 42	35699 85				35892 97	35892 97	35892 97	35963 09	35763 09	35760 69
35698 43	35698 43	35699 86	35892 98	35892 98	35892 98				35963 10	35763 10	35760 70
35698 44	35698 44	35699 87				35892 99	35892 99	35892 99	35963 11	35763 11	35760 71
35698 45	35698 45	35699 88	35893 00	35893 00	35893 00				35963 12	35763 12	35760 72
35698 46	35698 46	35699 89				35893 01	35893 01	35893 01	35963 13	35763 13	35760 73
35698 47	35698 47	35699 90	35893 02	35893 02	35893 02				35963 14	35763 14	35760 74
35698 48	35698 48	35699 91				35893 03	35893 03	35893 03	35963 15	35763 15	35760 75
35698 49	35698 49	35699 92	35893 04	35893 04	35893 04				35963 16	35763 16	35760 76
35698 50	35698 50	35699 93				35893 05	35893 05	35893 05	35963 17	35763 17	35760 77
35698 51	35698 51	35699 94	35893 06	35893 06	35893 06				35963 18	35763 18	35760 78
35698 52	35698 52	35699 95				35893 07	35893 07	35893 07	35963 19	35763 19	35760 79
35698 53	35698 53	35699 96	35893 08	35893 08	35893 08				35963 20	35763 20	35760 80
35698 54	35698 54	35699 97				35893 09	35893 09	35893 09	35963 21	35763 21	35760 81
35698 55	35698 55	35699 98	35893 10	35893 10	35893 10				35963 22	35763 22	35760 82
35698 56	35698 56	35699 99				35893 11	35893 11	35893 11	35963 23	35763 23	35760 83
35698 57	35698 57	35699 00	35893 12	35893 12	35893 12				35963 24	35763 24	35760 84
35698 58	35698 58	35699 01				35893 13	35893 13	35893 13	35963 25	35763 25	35760 85
35698 59	35698 59	35699 02	35893 14	35893 14	35893 14				35963 26	35763 26	35760 86
35698 60	35698 60	35699 03				35893 15	35893 15	35893 15	35963 27	35763 27	35760 87
35698 61	35698 61	35699 04	35893 16	35893 16	35893 16				35963 28	35763 28	35760 88
35698 62	35698 62	35699 05				35893 17	35893 17	35893 17	35963 29	35763 29	35760 89
35698 63	35698 63	35699 06	35893 18	35893 18	35893 18				35963 30	35763 30	35760 90
35698 64	35698 64	35699 07				35893 19	35893 19	35893 19	35963 31	35763 31	35760 9



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1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published
36395 10	36361 21 36395 30	36361 21 36394 00 pt 36399 60	36920 05— Con.	36920 05— Con.	36920 10 pt — Con. 36920 82 pt 36920 92 pt	37112 02— Con.	37112 02— Con.	37112 23 pt — Con. 37112 26 pt	37131 07	37131 07	37131 60 pt
36395 20	36361 84 36395 40	36361 84 36394 00 pt 36399 91 36399 93	36920 07	36920 07	36920 10 pt 36920 70 pt 36920 82 pt 36920 92 pt	37112 03	37112 03	37112 11 pt 37112 13 pt	37131 11	37131 40	37131 40
36411 00	36410 10	36410 20 36410 55 36410 63	36920 09	36920 09	36920 95	37112 04	37112 04	37112 11 pt 37112 13 pt 37112 15 pt	37131 13	37131 13	37131 42 37131 46
36412 00	36994 22	36994 11 36994 21	36941 01	36941 01	36941 11	37112 05	37112 05	37112 11 pt 37112 13 pt	37131 15	37131 48	37131 48
36489 12	36489 12	36489 11 pt 36489 19 pt	36941 02	36941 02	36941 16	37112 06	37112 06	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37131 16	37131 50	37131 50
36489 16	36489 16	36489 11 pt	36941 03	36941 03	36941 31	37112 07	37112 07	37112 11 pt 37112 13 pt 37112 15 pt	37131 17	37131 52	37131 52
36489 17	36489 17	36489 19 pt	36941 04	36941 04	36941 35	37112 08	37112 08	37112 11 pt 37112 13 pt 37112 15 pt	37131 21	37131 37	37131 37
36520 00	36520 00	36521 00 36521 19	36942 01	36942 01	36942 14 36942 28 pt	37112 09	37112 09	37112 11 pt 37112 13 pt 37112 15 pt	37131 43	37131 30	37131 30
36520 01	36520 01	36521 01 pt 36521 02 pt	36942 02	36942 02	36942 27 36942 28 pt	37112 10	37112 10	37112 11 pt 37112 13 pt 37112 15 pt	37131 49	37131 49	37131 12 pt 37131 25
36520 03	36520 03	36521 01 pt 36521 02 pt	36942 03	36942 03	36942 27 36942 28 pt	37112 11	37112 11	37112 11 pt 37112 13 pt 37112 15 pt	37131 53	37131 33	37131 33
36520 05	36520 05	36521 03 36521 04	36942 04	36942 04	36942 37 36942 41 36942 42	37112 12	37112 12	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37131 55	37131 34	37131 34
36520 07	36520 07	36521 05	36943 01	36943 01	36943 11 36943 42 pt	37112 13	37112 13	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37131 57	37131 54	37131 54
36520 09	36520 09	36521 12 36521 15	36943 02	36943 02	36943 41 36943 42 pt	37112 14	37112 14	37112 11 pt 37112 13 pt 37112 15 pt	37131 61	37131 36	37131 36
36520 11	36520 11	36521 11 36521 13 36521 14 36521 16	36943 03	36943 03	36943 41 36943 42 pt	37112 15	37112 15	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37131 62	37131 38	37131 38
36520 19	36520 19	36521 11 36521 13 36521 14 36521 16	36947 04 36947 05	36947 04 36947 05	36947 03	37112 16	37112 16	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37131 63	37131 56	37131 56
36613 00	35732 50 36612 20	35732 00 pt 36612 00 pt	36949 07	36949 07	36949 09 pt	37112 17	37112 17	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37131 69	37131 69	37131 60 pt
36614 00	36612 40	36612 00 pt	36949 11	36949 11	36949 02	37112 18	37112 18	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 01	37132 79	37132 79
36631 00	36621 00 36629 41	36621 00 36629 00 pt	36949 12	36949 12	36949 03 36949 04	37112 19	37112 19	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 02	37132 02	37132 71 37132 75
36632 00	36622 00	36622 00	36949 13	36949 13	36949 05 36949 06	37112 20	37112 20	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 03	37132 03	37132 98 pt
36691 00	36624 00	36624 00	36949 19	36949 19	36949 09 pt	37112 21	37112 21	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 05	37132 05	37132 98 pt
36692 00	36626 00	36626 00	36950 00	35732 20 36792 00	35732 00 pt 36792 00	37112 22	37112 22	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 06	37132 06	37132 98 pt
36693 00	36628 00	36628 00	36991 00	36629 10 36629 45	36629 00 pt	37112 23	37112 23	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 07	37132 07	37132 98 pt
36714 00	36714 00	36711 00 36712 00	36992 00	36629 20	36629 00 pt	37112 24	37112 24	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 08	37132 08	37132 98 pt
36715 00	36799 10	36799 00 pt	36995 00	36629 30	36629 00 pt	37112 25	37112 25	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 09	37132 09	37132 98 pt
36720 00	36797 00	36797 00	36997 00	35497 65 36629 47 36629 50	35497 65 36629 00 pt	37112 26	37112 26	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 10	37132 10	37132 98 pt
36799 20	36799 20 36629 42	36629 00 pt 36799 00 pt	36998 01	36994 51	36994 51	37112 27	37112 27	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 11	37132 11	37132 98 pt
36799 30	36799 30	36799 00 pt	36998 02	36994 71	36994 71	37112 28	37112 28	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 12	37132 12	37132 98 pt
36913 17	36913 17	36913 15 36913 16	36998 03	36994 72	36994 96 pt	37112 29	37112 29	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 13	37132 13	37132 98 pt
36914 25	36914 25	36914 21 36914 29	36998 04	36994 82	36994 82	37112 30	37112 30	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 14	37132 14	37132 98 pt
36915 01	36915 01	36915 72 36915 75	36998 05	36994 83	36994 83	37112 31	37112 31	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 15	37132 15	37132 98 pt
36915 02	36915 02	36915 85	36998 06	36994 84	36994 84	37112 32	37112 32	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 16	37132 16	37132 98 pt
36920 01	36920 01	36920 10 pt 36920 70 pt 36920 82 pt	36998 07	36994 85	36994 85	37112 33	37112 33	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 17	37132 17	37132 98 pt
36920 03	36920 03	36920 70 pt 36920 82 pt	36998 19	36994 97	36994 81 36994 96 pt	37112 34	37112 34	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 18	37132 18	37132 98 pt
36920 04	36920 04	36920 70 pt 36920 82 pt	37112 01	37112 01	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37112 35	37112 35	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 19	37132 19	37132 98 pt
36920 05	36920 05	36920 10 pt 36920 70 pt	37112 02	37112 02	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37112 36	37112 36	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 20	37132 20	37132 98 pt
						37112 37	37112 37	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 21	37132 21	37132 98 pt
						37112 38	37112 38	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 22	37132 22	37132 98 pt
						37112 39	37112 39	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 23	37132 23	37132 98 pt
						37112 40	37112 40	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 24	37132 24	37132 98 pt
						37112 41	37112 41	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 25	37132 25	37132 98 pt
						37112 42	37112 42	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 26	37132 26	37132 98 pt
						37112 43	37112 43	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 27	37132 27	37132 98 pt
						37112 44	37112 44	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 28	37132 28	37132 98 pt
						37112 45	37112 45	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 29	37132 29	37132 98 pt
						37112 46	37112 46	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 30	37132 30	37132 98 pt
						37112 47	37112 47	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 31	37132 31	37132 98 pt
						37112 48	37112 48	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 32	37132 32	37132 98 pt
						37112 49	37112 49	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 33	37132 33	37132 98 pt
						37112 50	37112 50	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 34	37132 34	37132 98 pt
						37112 51	37112 51	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 35	37132 35	37132 98 pt
						37112 52	37112 52	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 36	37132 36	37132 98 pt
						37112 53	37112 53	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 37	37132 37	37132 98 pt
						37112 54	37112 54	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 37112 23 pt 37112 25 pt 37112 26 pt	37132 38	37132 38	37132 98 pt
						37112 55	37112 55	37112 11 pt 37112 13 pt 37112 15 pt 37112 17 pt 37112 21 pt 3			

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1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published
3714A 01	3714A 01	37143 31	37322 21— Con.	37322 21— Con.	37322 40— Con. 37322 49	37433 03	37433 62	37433 62	38121 00	38111 00	38111 00
3714A 02	3714A 02	37143 21				37433 04	37433 69	37433 69	38122 00	36625 30 36629 44	36625 00 pt 36629 00 pt
3714A 03	3714A 03	37143 23	37322 23	37322 23	37322 47	37433 11	37433 71	37433 71	38210 10	38112 00	38112 00
3714A 04	3714A 04	37143 26	37322 25	37322 25	37322 48	37433 12 37433 13 37433 14 37433 15	37433 12 37433 13 37433 14 37433 15	37433 79	38210 20	38113 20	38113 00 pt
3714A 05 3714A 06	3714A 05 3714A 06	37143 49 pt	37322 27 37322 28	37322 27 37322 28	37322 55 pt	37511 01	37511 11	37511 11	38244 00	38244 00	38244 11 38244 21 38244 31 38244 99
3714A 07	3714A 07	37143 44	37322 29	37322 29	37322 53 37322 55 pt 37322 61				37511 02	37511 21	37511 21
3714A 08	3714A 08	37143 49 pt				37511 03	37511 31	37511 31	38271 00	38324 00	38324 00
3714A 09	3714A 09	37143 46	37323 03	37323 03	37323 11 pt 37323 30	37511 04	37511 42	37511 42	38272 00 38273 00	38325 30 38325 40	38325 00
3714A 10	3714A 10	37143 47	37323 05	37323 05	37323 11 pt 37323 35	37511 05	37511 44	37511 44	38295 10	38293 00	38293 00
3714A 11	3714A 11	37143 48				37511 06	37511 51	37511 51	38295 20	36625 20	36625 00 pt
3714A 12 3714A 13 3714A 19	3714A 12 3714A 13 3714A 19	37143 49 pt	37323 07	37323 07	37323 11 pt 37323 50	37511 09	37511 59	37511 59	38296 00	38113 10	38113 00 pt
37151 00	37151 00	37151 10 37151 50	37323 09	37323 09	37323 11 pt 37323 54				38411 42	38411 42	38411 41 38411 45 38411 46
37152 01 37152 02	37152 01 37152 02	37152 00	37323 13	37323 13	37323 11 pt 37323 56	37511 10 37511 12 37511 13 37511 14 37511 15 37511 16 37511 19	37511 10 37511 12 37511 13 37511 14 37511 15 37511 16 37511 19	37511 71	38411 72	38411 72	38411 71 pt
37211 00	37211 00	37211 21 37211 23 37211 28				37512 01	37512 01	37512 14 37512 17			
37244 01 37244 02	37244 01 37244 02	37244 13	37323 17	37323 17	37323 11 pt 37323 70 37323 75	37512 06 37512 07	37512 06 37512 07	37512 53	38411 87	38411 87	38411 84 pt
37244 05 37244 06	37244 05 37244 06	37244 53				37512 01	37612 25	37612 25	38411 97	38411 97	38411 98 pt
37311 01	37311 01	37311 11 pt 37311 21	37324 03	37324 03	37324 18 pt 37324 20 pt 37324 25 pt	37612 02	37612 02	37612 35 37612 45	38411 99	38411 99	38411 71 pt 38411 84 pt 38411 98 pt
37311 02	37311 02	37311 11 pt 37311 31				37614 01	37614 13	37614 13	38421 01	38421 01	38421 99 pt
37311 03	37311 03	37311 11 pt 37311 41	37324 05	37324 05	37324 18 pt 37324 20 pt 37324 25 pt	37614 02	37614 02	37614 15 37614 17	38421 02	38421 02	38421 35 pt
37311 04	37311 04	37311 11 pt 37311 51				37615 01	37615 11	37615 11	38421 03	38421 03	38421 99 pt
37311 05	37311 05	37311 11 pt 37311 61	37324 07	37324 07	37324 18 pt 37324 20 pt 37324 25 pt	37615 02	37615 13	37615 13	38421 04	38421 04	38421 11 pt
37311 06	37311 06	37311 81 pt				37615 03	37615 03	37615 15 37615 23	38421 05	38421 41	38421 41
37311 07	37311 75	37311 75	37324 09	37324 09	37324 18 pt 37324 20 pt 37324 25 pt	37922 61 37922 63 37922 69	37922 61 37922 63 37922 69	37922 59	38421 06	38421 38	38421 38
37311 09	37311 09	37311 11 pt 37311 81 pt				37927 01	37327 01	37327 22 37327 25 pt 37327 32 37327 35 pt	37950 01	37950 01	37950 11 37950 15
37313 21	37313 21	37313 98 pt	37327 03	37327 03	37327 25 pt 37327 28 pt 37327 35 pt 37327 38 pt	37950 01	37950 01	37950 15	38421 08	38421 82	38421 82
37313 29	37313 29	37313 10 37313 12 37313 14 37313 98 pt				37996 01	37996 30	37996 30	38421 09	38421 81	38421 81
37316 01	37316 01	37316 13 37316 53	37327 05	37327 05	37327 28 pt 37327 38 pt	37996 02	37996 32	37996 32	38421 10	38421 45	38421 45
37316 02	37316 02	37316 19 37316 59				37996 03	37996 34	37996 34	38421 12 38421 13	38421 12 38421 13	38421 99 pt
37322 01	37322 01	37322 03 37322 04 37322 06 37322 08	37327 07	37327 07	37327 28 pt 37327 38 pt	37996 04	37996 36	37996 36	38421 37	38421 37	38421 33 38421 34
						37996 08 37996 09	37996 08 37996 09	37996 39	38421 91	38421 91	38421 99 pt
37322 02	37322 02	37322 11	37327 09	37327 09	37327 28 pt 37327 38 pt	37999 01	37999 01	37994 92	38421 97	38421 97	38421 15 38421 99 pt
37322 05 37322 07	37322 05 37322 07	37322 19 pt	37327 11 37327 13 37327 15	37327 11 37327 13 37327 15	37327 41	37999 02	37999 02	37994 94	38421 98	38421 98	38421 11 pt 38421 35 pt 38421 99 pt
37322 09	37322 09	37322 15				37999 03	37999 03	37998 62	38423 21 38423 22 38423 23 38423 24	38423 21 38423 22 38423 23 38423 24	38423 31
37322 11	37322 11	37322 19 pt	37328 00	37328 00	37328 11 37328 21	37999 04	37999 04	37998 64	38431 12 38431 13	38431 12 38431 13	38431 04
37322 13	37322 13	37322 17 37322 19 pt	37431 11	37431 72	37431 72	37999 05	37999 05	37998 80	38440 00	36931 00	36931 00
37322 21	37322 21	37322 40 37322 42 37322 44	37431 12 37431 15 37431 17 37431 18	37431 12 37431 15 37431 17 37431 18	37431 79	37999 06	37999 06	37998 53	38450 00	36933 00	36933 00
			37433 01	37433 41	37433 41	37999 19	37999 19	37998 35 37998 51 37998 82 37998 84 37998 86 37998 90	38511 18 38511 19	38511 18 38511 19	38511 17
			37433 02	37433 61	37433 61	37999 21	37999 21	37998 88	38517 04 38517 05	38517 04 38517 05	38517 09



[Based on revisions to the Standard Industrial Classification (SIC) Manual, definitions of some product codes were revised for 1987. Listed below are the revisions to the product codes. The terms published and collected are defined as follows: (1) published refers to the code used in the published reports for 1987 and 1982, and (2) collected refers to the code appearing on the report forms for 1987]

1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published	1987 published	1987 collected	1982 published
38517 04— Con.	38517 04— Con.	38517 09— Con.	38731 06	38731 06	38737 01	39153 11	39153 11	39151 13 pt	39610 65— Con.	39610 65— Con.	39610 72— Con.
38517 06	38517 06		38731 07	38731 07	38737 02	39153 12	39153 12	39151 31 pt	39610 71	39610 71	
38517 07	38517 07				38737 03	39153 21	39153 21	39151 41	39610 93	39610 93	39610 91
38517 10	38517 10		38731 11	38731 11	38737 19	39153 31	39153 31	39151 51 pt	39610 95	39610 95	
38517 11	38517 11										
38611 11	38611 11	38611 12 38611 14	38731 13	38731 13	38736 39	39154 00	39154 11	39151 13 pt 39151 31 pt 39151 51 pt	39651 01	39630 11	39630 11
38611 69	38611 69	38611 67 38611 68	38732 01	38732 01	38732 10 38732 22	39314 24 39314 25	39314 24 39314 25	39314 23	39651 09	39630 15	39630 15
38611 91	38611 91	38611 81	38732 02	38732 02	38732 14 38732 24	39443 46	39443 46	39443 44 39443 45	39651 11	39630 41	39630 41
38611 98	38611 98	38611 43 38611 99	38732 03	38732 03	38732 16 38732 26	39443 47 39443 98	39443 47 39443 98	39443 99	39651 19	39630 51	39630 51
38613 17	38613 17	38613 27 38613 46	38732 09	38732 09	38732 18 38732 20 38732 29 38732 30	39447 16	36629 46	36629 00 pt	39651 21	39630 61	39630 61
38613 89	38613 89	38613 98				39493 01	39493 01	39494 62	39651 29	39630 98	39630 98
						39493 02	39493 02	39494 63	39654 22	39641 22	39641 22
38613 97	38613 97	38613 61	39113 11	39113 11	39112 11 pt	39495 05	39495 05	39495 99 pt	39654 23	39641 23	39641 23
38615 01	38615 01	38615 11 38615 17 38615 32 38615 37	39113 21	39113 21	39112 21 pt	39495 72	39495 72	39495 78 39495 79	39654 31	39641 31	39641 31
			39113 31	39113 31	39112 31 pt				39654 33	39641 33	39641 33
38615 02	38615 02	38615 63	39113 41	39113 41	39112 41 pt	39495 81 39495 88 39495 89	39495 81 39495 88 39495 89	39495 99 pt	39654 39	39641 39	39641 39
			39113 98	39113 98	39112 98 pt				39656 20	39642 20	39642 20
38615 03	38615 03	38615 73 38615 74	39114 11	39114 11	39112 11 pt	39495 92	39495 92	39495 90 pt	39656 21	39642 21	39642 21
38615 04	38615 04	38615 75	39114 21	39114 21	39112 21 pt	39495 93	39495 93	39495 91 pt	39656 32	39642 32	39642 32
38615 05	38615 05	38615 57 38615 64 38615 65 38615 76 38615 81	39114 31	39114 31	39112 31 pt	39495 96	39495 96	39495 90 pt 39495 91 pt	39656 33	39642 33	39642 33
			39114 41	39114 41	39112 41 pt	39495 98	39495 98	39495 99 pt	39656 51	39642 51	39642 51
38619 00	38619 00	38619 41 38619 43 38619 45	39114 51 39114 61 39114 71	39114 51 39114 61 39114 71	39112 98	39496 01	39496 01	39494 65	39656 71	39642 71	39642 71
						39496 02	39496 02	39494 68	39656 81	39642 81	39642 81
38731 01	38731 01	38734 11 38734 12 38736 11	39141 41 39141 43 39141 69	39141 41 39141 43 39141 69	39141 66	39496 03 39496 04	39496 03 39496 04	39494 70	39656 89	39642 89	39642 89
						39496 05	39496 05	39494 69	39991 51 39991 61 39991 69	39991 51 39991 61 39991 69	39991 67
38731 02	38731 02	38734 22 pt 38736 13 pt	39142 35	39142 35	39142 34 39142 36	39496 06	39496 06	39494 70 pt	39993 00	39993 00	39993 36 39993 61
38731 03	38731 03	38734 21 38734 22 pt 38736 12 38736 13 pt	39142 41 39142 43	39142 41 39142 43	39142 61	39523 00	39523 00	39521 00 39522 15	39997 11 39997 51	39997 11 39997 51	39997 00
			39142 55	39142 55	39142 54 39142 56	39524 13	39524 13	39522 13	39998 13	39620 13	39620 13
38731 05	38731 05	38736 31 38736 32 38736 33	39142 69	39142 69	39142 61 pt	39524 19	39524 19	39522 19	39998 15	39620 15	39620 15
						39610 65	39610 65	39610 72	39998 17	39620 17	39620 17
									39998 21	39620 21	39620 21



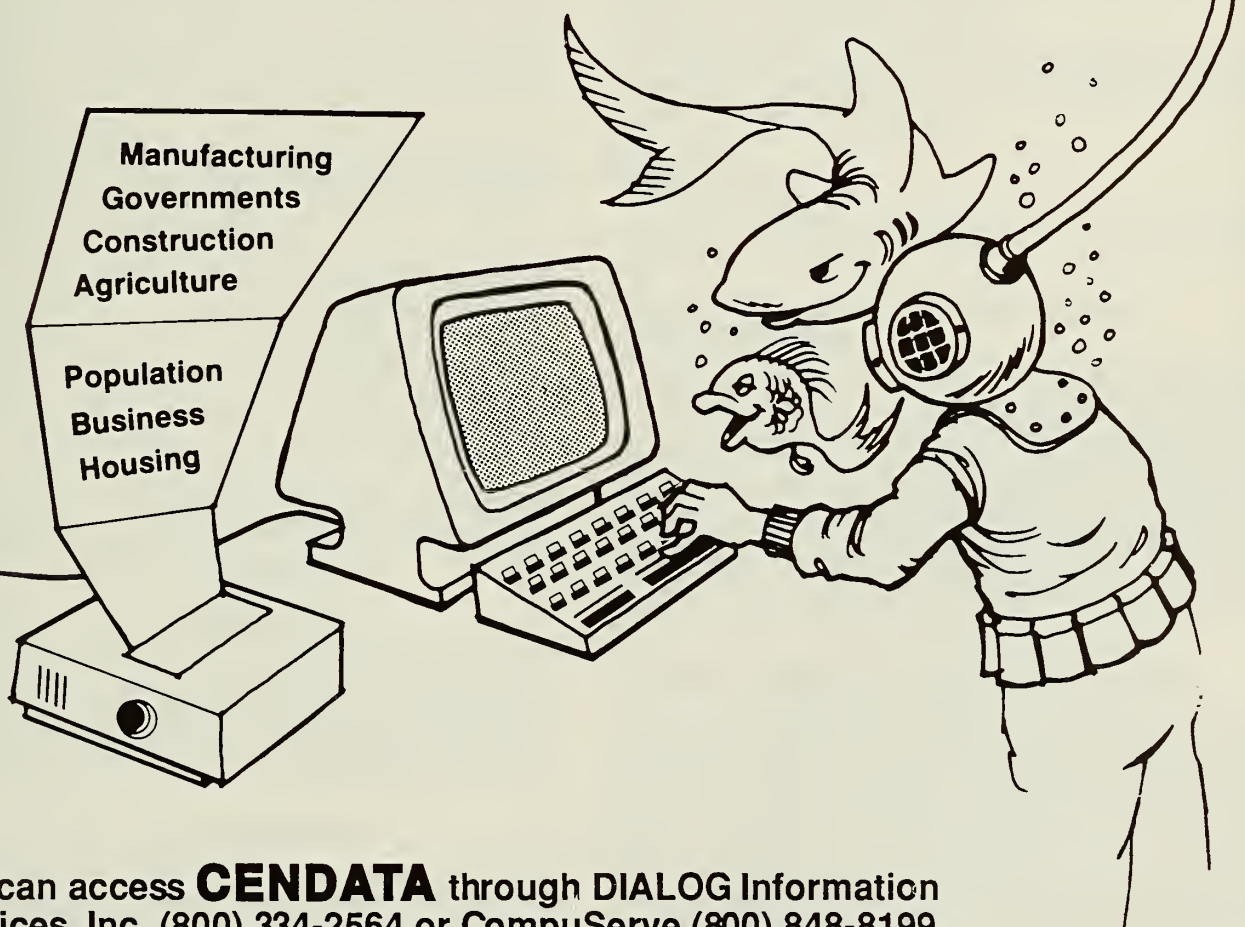


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# PUBLICATION PROGRAM

## 1987 CENSUS OF MANUFACTURES

Publications of the 1987 Census of Manufactures, containing preliminary and final data on manufacturing establishments in the United States, are described below. Publications order forms for the specific reports may be obtained from any Department of Commerce district office or from Data User Services Division, Customer Services (Publications), Bureau of the Census, Washington, DC 20233.

### Preliminary Reports

#### Industry series—83 reports (MC87-I-20A(P) to -39D(P))

Preliminary industry data are issued in 83 separate reports covering 459 industries. Preliminary summary data for the U.S. and States are released in one report.

### Final Reports

#### Industry series—83 reports (MC87-I-20A to -39D)

Each of the 83 reports provides information for a group of related industries ("dairy products" includes industries for butter, cheese, milk, etc.). Final figures for the United States are shown for each of the 459 manufacturing industries on quantity and value of products shipped and materials consumed, cost of fuels and electric energy, capital expenditures, assets, rents, inventories, employment, payroll, payroll supplements, hours worked, value added by manufacture, number of establishments, and number of companies. Comparative statistics for earlier years are provided where available.

For each industry, data on value of shipments, value added by manufacture, capital expenditures, employment, and payroll are shown by employment-size class of establishment, State, and degree of primary product specialization.

#### Geographic area series—51 reports (MC87-A-1 to -51)

A separate report is being published for each State and the District of Columbia. Each report presents data for industry groups and industries on value of shipments, cost of materials, value added by manufacture, employment, payroll, hours worked, new capital expenditures, and number of manufacturing establishments for the State, MSA's, counties, and selected places. Comparative statistics for earlier census years are shown for the State and large MSA's. Manufacturing totals are presented for each county and for places with significant manufacturing activity. Detailed statistics (including inventories, assets, rents, and energy costs) are presented only in statewide totals.

#### Subject series—7 reports (MC87-S-1 to -7)

Each of the seven reports contains detailed statistics for an individual subject, such as concentration ratios in manufacturing, type of organization, water use in manufacturing, textile machinery in place, distribution of sales by class of customer, manufacturers' shipments to the Federal Government, and a general national-level summary.

#### Reference series—1 report (MC87-R-1)

The Numerical List of Manufactured and Mineral Products includes a description of the principal products and services published in the 1987 Censuses of Manufactures and Mineral Industries.

#### Location of Manufacturing Plants—1 report (MC87-LM)

This report includes data for number of establishments by four-digit SIC industry and by employment-size class for counties, incorporated places of 2,500 inhabitants or more, and zip codes for each State. (This report is available only on magnetic tape and CD-ROM.)

### Analytical Reports—3 reports (AR87-1 to -3)

#### Exports From Manufacturing Establishments (AR87-1)

This report presents data on exports by two- and three-digit SIC industry groups for the United States and States. Information is presented on value of direct report shipments and estimates of the employment required to manufacture these products. Included are estimates of employment in manufacturing and nonmanufacturing establishments that supply parts, materials, and services for production of manufactured exports.

#### Selected Characteristics of Manufacturing Establishments That Export (AR87-2)

This report presents data on the number of manufacturing companies and establishments that export by major group, State, employment size, and ratios of exports to shipments.

#### Indexes of Production (AR87-3)

The indexes presented in this report are designed to measure the change in physical output of each manufacturing and mineral industry between 1982 and 1987.

## MICROFICHE

Every final published report in the 1987 Census of Manufactures will be available on microfiche.

## PUBLIC-USE COMPUTER TAPES AND COMPACT DISCS

Data from the final industry series, geographic area series, and the Location of Manufacturing Plants report will be available on public-use computer tapes and compact discs-read only memory (CD-ROM). These tapes will provide the same information found in the final reports. Computerized data products are available for users who wish to summarize, rearrange, or process large amounts of data. These products, with corresponding technical documentation, are sold by Data User Services Division, Customer Services (Tapes), Bureau of the Census, Washington, DC 20233.

## OTHER ECONOMIC CENSUSES REPORTS

Data on retail trade, wholesale trade, service industries, construction industries, mineral industries, transportation, enterprise statistics, minority-owned businesses, and women-owned businesses also are available from the 1987 Economic Censuses. A separate series of reports covers the censuses of outlying areas—Puerto Rico, Virgin Islands of the United States, Guam, and the Northern Mariana Islands. Separate announcements describing these reports are available free of charge from Data User Services Division, Customer Services (Publications), Bureau of the Census, Washington, DC 20233.













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